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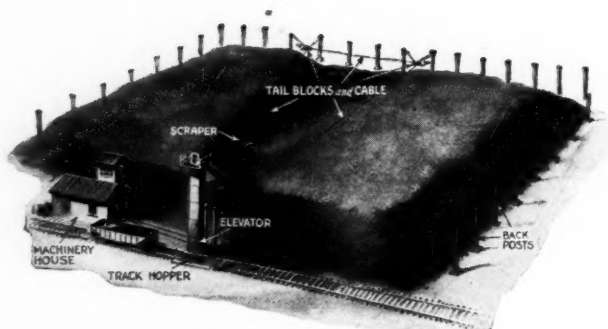
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# COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER, Editor

Volume 23

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Number 10

## Harry Harkness Stoek

**I**N THE death of H. H. Stoek the coal industry has lost a man of broad vision and progressiveness and yet withal one who made haste slowly. He was always careful and self-repressive in statement, a patient accumulator of information and one who never by over-zeal supported a wrong cause. When acting as editor of the *Colliery Engineer* and *Mines and Minerals*—it bore both names—he made that paper one of the leaders in the technical journalism of its day.

He had great diplomatic ability, and this had much value at the time when largely by his efforts one of the most drastic of all mine laws was passed by the Illinois Legislature. In face of this fact Mr. Stoek always had the hearty support of the coal operators of Illinois. They in fact strongly approved the safety laws of their state though they always felt aggrieved with the fact that other mining states with which they had to compete did not have so severe a law to hamper their operations.

Professor Stoek labored hard to increase the percentage of extraction in Illinois; he brought together what information is available about subsidence; he carefully watched and recorded what developed in the matter of coal storage. As an organizer he was a man of much talent, and the work he did at the University of Illinois as head of the Department of Mining Engineering and the co-operation he attained in his educational work have made that establishment the leader in bituminous-coal mining of all scholastic institutions.

## The Ins and Outs of Howat

**T**HE Alex Howat case in Kansas certainly has its farcical aspect. It is humorous to picture the former president of District 14, United Mine Workers of America, popped out of this jail and that by the efforts of the new Governor of the state only to be popped in again by the efforts of the state Attorney General. But it is not so humorous to witness a Governor of a great state scorning the labor legislation on the statute books of his commonwealth and openly conniving with those elements of the citizenry within the state that would violate a law simply because it is distasteful and disobey a court because it is unpopular with them, as Alex Howat disobeyed the Industrial Court of Kansas.

Governor Jonathan Davis should prove the unconstitutionality which he charges against the Industrial Court Act and get that act repealed by due legislative course before he takes the doubtful case of Alex Howat in his own plow-calloused hands and attempts to settle it by freeing a prisoner of the state. He is setting an exceedingly bad precedent. The only relieving touch in the Howat episode is the ludicrous bungling of the Governor. He freely lavishes pardons and paroles upon

the labor leader long ago discredited by his own national organization, but they do not mean anything. Some law enforcer always outwits the farmer Governor. And then Howat doesn't want his freedom anyway. When he is free he has to go to work. Periodical trips to jail, he seems to think, serve to keep alive the martyr worship he prizes so highly.

## Coal Commission Able to Finish Its Work

**C**ONGRESS in the end met every request of the United States Coal Commission, even to permission for Judge Alschuler to serve. An increase of 200 per cent in the appropriation, raising the total from \$200,000 to \$600,000, and some teeth in the law, making compulsory the answering of questionnaires, are the really important things, however, of which the added money is the more important. It is hoped that from now on there will be smooth sailing for the commission. Halting to get out the Jan. 15 report and several weeks of hesitation and uncertainty while the matter of added appropriation was being settled have slowed up to an appreciable extent the work in progress, and added to the doubts in the minds of the coal operators and the trade generally as to whether the whole thing might not blow up.

There is no reason now why anyone should delay sending to Washington data called for by the commission, unless it be the plain unvarnished desire to withhold. It is no secret that there are some coal operators and others who would like nothing better than to hamstring the whole program. It is fortunate that they are in the minority and do not represent the feeling of the majority of the leaders or of the rank and file. So far as we are aware the opposition to supplying facts to the coal commission centers in southern West Virginia. The feeling is quite general, however, that eventually this district will not only put in all the facts but that it will put them in just a little more complete and in better form than any other field. Whoever he may be, anyone will think hard and several times before giving the commission occasion to test the power of its authority.

## The Elements of a Lake Program

**W**HEN coal and railroad men begin to talk about the "Lake program" for the coming season, all may know that spring is on the way. From the high point for recent years of 28,000,000 tons in 1918 to the low of 18,000,000 tons in 1922 the Lake coal movement has varied. The real point of difference between years is not the total, however; it is the rate of movement. The railroads are showing concern over the prospect of getting coal started early and in volume for the Northwest. The dock operators fear that unless the freight rates to lower Lake ports are reduced or the costs of

transportation from Eastern and Midwestern fields are otherwise more nearly equalized there will be a dearth of coal put on the docks this year.

The ideal program for the Lakes is one that starts out strong, reaching a high rate of dumping early in the season, and tapers off late in the summer. Such were the records for 1919 and 1921. Contrasted with these ideal performances were the records for 1918, 1920 and 1922, when the humps in the curve came late in the season. Recent history shows all too clearly the difficulties that arise when the movement of this essential coal is too long delayed. Pressure of all manner of sorts develops and too often Washington becomes involved in the effort to make up lost time.

It will be noted that the best years were the easiest, when the natural laws of trade operated to pour the coal northward for storage in transit at the time of year when demand was at low ebb elsewhere. The inaccessible Northwest is a market that requires that the greater part of its winter coal be taken during the open months of the year. The trade via the Lakes was developed to supply that need, and thus to take advantage of the opportunity to mine and ship coal not called for by local markets. The commercial dock companies of the Northwest were originally and are now to a large extent subsidiaries of Eastern coal producers, established to furnish a summer outlet for production.

Under normal market conditions, as prior to the war and in 1919 and 1921, when summer demand for coal is slack, these companies can and do put sufficient coal up the Lakes to care for that territory. But when market conditions are abnormal—that is to say, when there is a strong demand for coal in the summer in nearby markets—the shippers having contracts or other arrangements to send coal to the Lakes must needs share the available car and transportation supply with a host of other shippers having no such obligations. Between bidding in a high spot market to make up for contract coal curtailed by car shortage and appealing to the government for preferential treatment the Northwest has chosen the latter as in 1918, 1920 and 1922. In these years the necessary supply was literally forced into that route after it became evident that not otherwise would the necessary supply be shipped.

The coming Lake season will take one form or the other. If coal from the Eastern fields flows easily and in volume when the season opens, the 23,000,000 tons or more of soft coal that apparently will be required for the Northwest will be obtained without particular effort. The attitude of railroads, utilities, industrials and retail dealers in the Northwest toward their fuel commitments will have much to do with the development of an early, strong start. Delayed buying will bring another last-month rush and appeals for help.

### *Fundamentally Wrong*

**L**OOK at it as we may there must be something fundamentally wrong or we would not have so many mine explosions as recently have occurred. It would be difficult to find three better disposed companies than the Woodward Iron Co., Phelps Dodge Corporation and the Weyanoke Coal & Coke Co., a subsidiary of the National Cash Register Co., in whose mines, nevertheless, explosions have recently occurred. The fact that the mine of the last-named company was operated by the Pattersons is a guarantee that little if anything would be spared to make the workings safe.

We may hope later to hear more of the details, and when we do we may find that what is said here about our American practice of building up coal far above the sides of the wagons does not apply to any of them. However, that practice is one of the arguments against rock dusting. With such a large quantity of spillage the rock dust, if used, would have to be loaded out frequently in order to keep the percentage of coal in the floor dust down to a safe figure.

This apparently is the real objection to rock dusting. It would seem to necessitate a change in our equipment, one that the loaders would resent because it would add to the difficulty of loading, and one the operators cannot feel disposed joyfully to accept because it would lower production, involve an immense expense and displease their men. We are getting wider and longer cars. We are building them closer to the tracks, but we are not keeping the old standards of height, for we are utilizing the advances in breadth, length and lowness of bed to obtain large capacity with lessened car depth. Furthermore, it is felt that the building up of the cars with lumps puts a premium on large coal and saves expense in the equipment provided for hauling, hoisting and dumping cars.

Doubtless these considerations weighed but little with the companies mentioned, but we are all creatures of habit, and the practice of rock dusting not being established because of these considerations, even the companies more prodigal in providing protection have not taken kindly to extensive rock dusting because precedents in the practice were almost entirely lacking in this country.

Furthermore, sprinkling and moistening of the atmosphere seemed as good and a less expensive method. Clearly, however, it has not proved a complete solution of the difficulty and the whole problem of mine protection must be considered from a new viewpoint.

The dangers of derailed cars can be met as far as feeders are concerned by putting them in a trench covered by a plank. The trolley line should be safeguarded by taking care that the timbers are so protected that derailment of a car or even of a trip of cars will not dislodge the posts by which the trolley line is supported. Where the roof tends to break up as the air weathers it the roadways should be protected by a thin coating of cement mortar, and big barrier pillars should be provided so that the roof will be free of a strain that would make the cement mortar an unavailing protection.

Unfortunately such pillars cannot be provided in room entries. Here the trolley locomotive might give way to the storage-battery unit where the roof is bad, but in that case how could current be supplied to the machines if the trolley system or a special feed wire were not provided? Attaching the trolley supports to the side would be no preventive of damage from roof falls should the roof give way, for if the rock fell on the wire or the trolley supports both would come down and cause a severe short-circuit. The danger of accident would be greatly minimized, however, if the heading were plentifully sprinkled with rock dust. With more cemented roadways, with rock dust liberally bespread and with cars that do not spill their contents over the roadways the dangers from explosions would be greatly lessened. We are facing a situation nearly as bad as that when the Monongah, Jacobs Creek, Yolande and Naomi explosions confronted us, and something will and must be done to make our mines safer.



# Pocahontas Coal Field and Operating Methods of the United States Coal & Coke Co.\*

Mining Methods Now in Favor—Performance of Undercutting Machines—Consumption of Timber per Ton and per Acre—Car Duty and Maintenance Costs—Output per Man—Power Consumption—Expenditures on Materials

BY EDWARD O'TOOLE†  
Gary, W. Va.

THE Pocahontas district occupies the extreme southern end of West Virginia, principally McDowell, Mercer and Wyoming counties, and a part of Tazewell County, in southwestern Virginia. The first record of the coal field is a report by Prof. J. P. Lesley, of Pennsylvania, about 1880, in which he mentions a coal opening at the upper end of Abbs Valley, Tazewell County, Virginia. C. R. Boyd, a mining engineer of Wytheville, Va., published a series of articles in 1881, mentioning coal on Indian Creek, Tazewell County, and on Horse Pen Creek, which coals, he stated, extended toward the Ohio River. He also mentions the Abbs Valley coal reported by Lesley.

In 1881 F. J. Kimball (who became president of the Norfolk & Western R.R. in 1883), after examining the Scott mine in Abbs Valley, went northward across Abbs Valley Mountain to the place now known as Pocahontas, where he located what has since been called No. 3 vein of Pocahontas coal. In November, 1882, Jed Hotchkiss and others prepared a cross-section of the Flat Top Mountain coal measures, some notes on which were published by Mr. Hotchkiss, between 1880 and 1892, under the title of "The Virginias."

In May, 1881, the Norfolk & Western R.R. was organized through the purchase of the Atlantic, Mississippi & Ohio R.R., an old line running from Norfolk, Va., to Bristol, Tenn., with branches from Petersburg to City Point and from Glade Springs to Saltville. At that time charters had been granted for three railroads tributary to the New River Valley, but their proposed routes would indicate that the promoters were concerned with minerals, timber and a connection with the Chesapeake & Ohio R.R. rather than the development of any coal in the Pocahontas district. One of them was projected to extend up Bluestone River a short distance, but not far enough to reach the coal in the Bluestone Valley, and a little grading was done for a narrow-gage road between New River Station and a point in Giles County, Virginia, near the West Virginia line. All charters and railroads in this district were acquired by the Norfolk & Western R.R. early in 1882, and during

that year construction was actively prosecuted on this company's main line from near Radford, Va., to the Pocahontas coal field.

In the meantime the Southwest Virginia Improvement Co. began to open coal mines and build coke ovens at Pocahontas and vicinity, so as to be ready to make shipments as soon as the railroad should be completed, which was in 1883. Shipments began in June, and during that year 81,800 tons of Pocahontas coal and 23,763 tons of coke were shipped. From 1884 to 1888 the Norfolk & Western extended its lines down Bluestone River to Flipping Creek and up the latter. In 1888 it completed

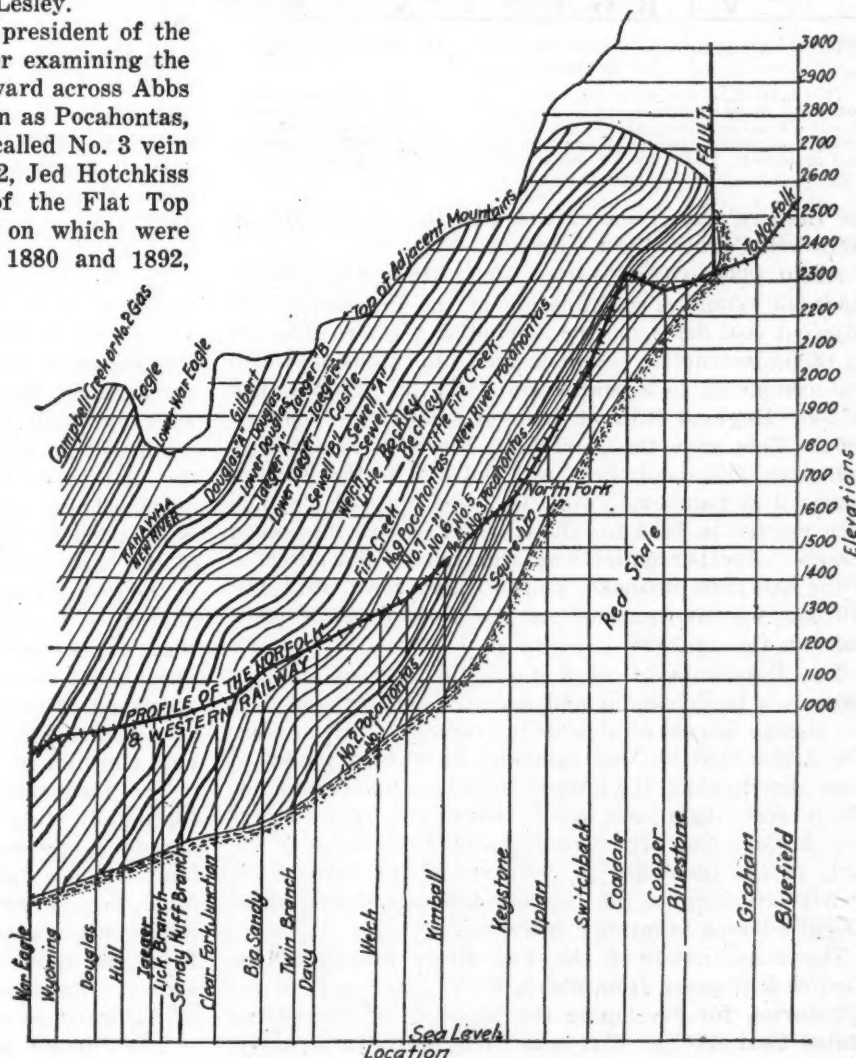


FIG. 1—PROFILE OF COAL SEAMS OUTCROPPING ON NORFOLK & WESTERN RY.

It will be noted that McDowell County not only has the Pocahontas, or Pottsville measures but, in the western end, the New River series and even part of the Kanawha series. However, this profile on the left oversteps the McDowell County line a little, Wyoming being in that county and War Eagle in Mingo. The Kanawha and New River measures lie unconformably on the Mauch Chunk red shale and so in a degree do the Pocahontas measures.

†General superintendent, United States Coal & Coke Co.

\*Article delivered at the February meeting of the American Institute of Mining and Metallurgical Engineers, New York City, Feb. 20.



FIG. 2—NORFOLK & WESTERN RY. AND THE ADJACENT COAL FIELDS

This map does not show all the coal fields in the area presented but only those tributary in a degree to a railway system mentioned. Coal is found almost all over the area illustrated, Logan, Raleigh, Fayette, Boone, Kanawha and Letcher being important coal producers, and many of the others possessing some coal lands.

the Elkhorn tunnel and extended its line to Elkhorn, in McDowell County, West Virginia.

About 1886 to 1889 Messrs. McCreath and d'Inwilliers made an extensive examination of the Pocahontas and adjacent coal fields for the Norfolk & Western R.R. Co. In 1890 construction began on the Ohio extension, which was completed to a connection with the Scioto Valley & New England R.R. at Ironton, Ohio, in November, 1892. This gave the Norfolk & Western an outlet to Columbus, Ohio and the West, and also to the Eastern seaboard at Lamberts Point, Va., where a coal pier had been erected in 1885 for the transfer of coal into ocean vessels. Another outlet was acquired by the purchase of the line from Roanoke, Va., to Hagerstown, Md. The railroad was reorganized as the Norfolk & Western Railway Co. in 1896.

The Pocahontas Coal & Coke Co., incorporated in 1901, is a land holding and leasing company and does not engage in coal mining or in trading in coal or coke. The areas held by this company have been increased from year to year, the present total being 300,000 acres. The largest single lease now is that of the United States Coal & Coke Co. The Crozer Land Association in the early period assembled 16,000 acres of coal land immediately tributary to the Norfolk & Western Ry., all of which is leased to mining operators.

The construction of the Tug River branch of the Norfolk & Western from Welch, W. Va., up Tug Fork and tributaries, for developing the leasehold of the United States Coal & Coke Co., was undertaken in January, 1902, and a second section in May, 1903. Fifteen miles were put in operation to and above Gary in June, 1904. Extensions in this valley have been made from time to time, and at present there are seventy-five miles of railroad on this branch.

According to I. C. White, state geologist of West Virginia, "The lowest and oldest rocks are the Mauch Chunk red shales, which crop to the surface in narrow belts along the crest of the Dry Fork anticline in the southeastern portion of McDowell County. The Pottsville measures, or basal formation of the Pennsylvanian, constitute at least 95 per cent of the outcropping rocks, the entire group being represented in Wyoming and McDowell counties." White also gives the sections, names and elevations of the coal seams of the Pocahontas coal field.

Fig. 1 shows a section (with greatly exaggerated vertical scale) along the Norfolk & Western Ry.; this road, except at the Elkhorn tunnel at Coal Dale, follows the Tug River and Elkhorn Creek 15 to 20 ft. above their beds. So far as known at present, seven seams in the New River group, namely: Douglas, Iaeger "B," Iaeger, Sewell "B," Sewell, Welch and Beckley, are of workable thickness in McDowell County. Thus the Pocahontas coal field is not really synonymous with the McDowell County coal area, as has been quite generally believed.

#### FOUR OF POCAHONTAS SEAMS ARE WORKABLE

Only four seams in the Pocahontas group, namely, Pocahontas Nos. 3, 4, 5 and 6, are known to be of workable thickness. No seam of either group is coextensive with the field. The thickest seam of the Pocahontas series is No. 3, which is 12 ft. thick at Pocahontas, but only 11 ft. in the Elkhorn tunnel, 3 miles from Bluestone; it gradually thins in a northwesterly direction until it reaches Kimball, 17 miles west of Bluestone, where it goes under water, with a thickness of 7 ft. On Tug Fork Branch, on the lease of the United States Coal & Coke Co., it is from 3 to 8 ft. thick.

The No. 4 Pocahontas seam on the lease of the United States Coal & Coke Co. runs from 3 to 7.5 ft. thick. These two seams are similar in character. The workable seams of the Sewell group, immediately above, have a maximum thickness of 5 ft. averaging about 3 ft. where worked.

As will be noted, the Pocahontas coals are found in the oldest coal-bearing measures of the Appalachian fields. Their present area is comparatively small, and is bounded by a fault on the southeast and by the edge of the basin on the east, north and west. All the coals in the Pocahontas field are low in sulphur, ash and phosphorus; it is seldom that an analysis shows ash more than 4 per cent, sulphur more than 0.6 per cent, or phosphorus above 0.008 per cent, unless portions of the overlying or underlying strata or of the partings have been included in the sample in which case these constituents run higher.

The topography of the Pocahontas coal field is exceptionally steep and rugged, consisting chiefly of high narrow ridges and V-shaped valleys, the latter affording limited space for railroads, highways and town sites. Much forethought is required in the planning of mining towns and plants. The fall of the main stream, Tug River, is approximately 0.5 per cent, except near its source. Railroads have been built along it and some of its branches with grades varying up to 3 per cent.

The climate is mild, and hard winters are of rare occurrence. The rainfall is unusually heavy, from 50 to 55 in. per year, and furnishes an abundance of water for all purposes except during the four or five dry months, when reliance must be placed on deep wells, as the stream becomes low and more or less polluted.



This exceptionally heavy rainfall creates a serious problem in mine drainage.

The mountains were originally covered with abundant timber, but now all building material and about 80 per cent of the mine timbers is brought in from other localities, generally from Georgia, Alabama and Mississippi.

A large percentage of the labor now employed comes from the surrounding states and from foreign countries. The clerical, engineering, skilled labor and directing forces consist principally of native Americans, while the largest part of the manual labor is performed by the colored and foreign employees. The labor is well trained and efficient, diligent and loyal. There are no labor unions in the field, although there are various secret and benevolent orders among all classes of labor. All the mines of the Pocahontas field are served by the Norfolk & Western Ry.; the coal is easily accessible and outcrops on the mountain sides throughout the greater part of the territory.

#### OPERATING DEVELOPED DISCONTINUITY OF BEDS

Previous to the entrance of the United States Coal & Coke Co. into the field, prospecting, drilling and correlating of the coal seams was done in a superficial manner. The operating companies were small and their holdings consisted of leases 3,000 acres or less in area. The land-holding companies found no necessity for prospecting up to that time.

Before it had thoroughly inspected its property the United States Coal & Coke Co. began the development of the Tug River section, and started to build its railroads and towns. The Pocahontas No. 3 seam had been thoroughly developed along the Elkhorn River by operating mines, and it was supposed that this seam continued through the mountain to the valley of the Tug

River, but when the seam was developed at many points on the Tug River front it was found that in every opening the coal pinched out at a distance varying from 50 to 800 ft. from the outcrop.

As railroad and town building had been pushed vigorously, much expense had been incurred prior to the time when the coal disappeared. To avoid further loss the property was now most thoroughly prospected by outcrop openings and diamond-drill borings. Openings were started every 1,000 ft. along the entire outcrop of No. 3 seam, a distance of 105 miles, and openings were made also on other seams. Diamond-drill cores were taken at desirable points, ranging from 1,000 ft. to 5 miles apart. This work developed the fact that the openings on the Tug River side of the mountain were not in the famous No. 3 Pocahontas seam but on the No. 4 seam, 65 ft. above it. It further developed that under a considerable area both the No. 3 and No. 4 seams were wanting, but that, on the other hand, these two seams were in place, of good minable thickness, over a large portion of the property, and that the total area carrying both seams exceeded by about 20,000 acres the amount expected at the beginning. Had the property been only partly prospected at the start, disclosing that No. 3 seam was wanting over a large portion of the territory, and that the outcrop openings were on No. 4 instead of No. 3 seam, the lease probably would have been abandoned and development would have been retarded for years.

In the calculation of available tonnage a line 80 ft. inside the outcrop was taken as the limit of merchantable coal. The actual distance from outcrop to good coal averages 77 ft., thus confirming the estimate. The yield was estimated at 1,500 tons per acre-foot and this also has proved a fairly accurate assumption.

The United States Coal & Coke Co., a subsidiary of

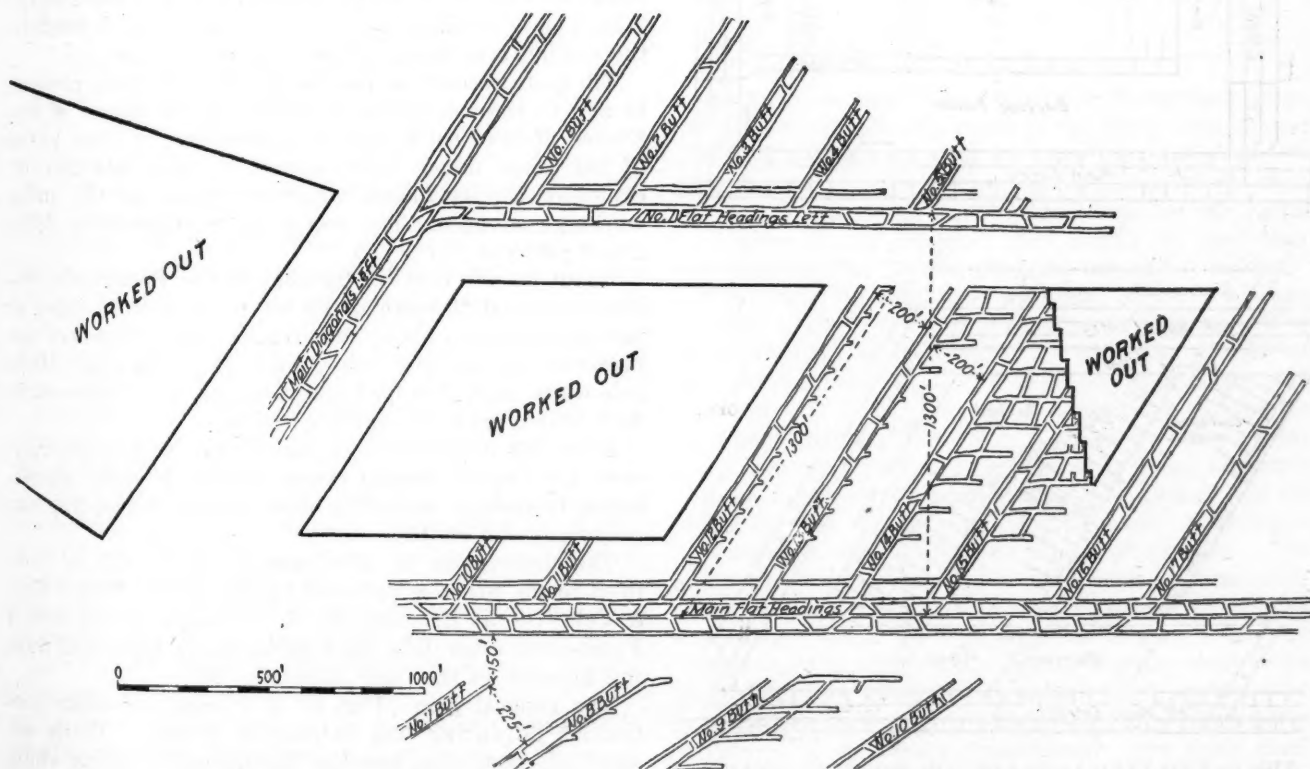


FIG. 3—OLD METHOD OF WORKING BY PANELS

This was the first method of mining that the Pocahontas region adopted. It was a slow way of developing the coal and an expensive way of extracting it. Too many

roads had to be maintained, the ventilation was costly, coal was lost, too much territory was kept open, too much capital was needed for equipment, and supervision was

difficult, resulting in high cost for this service and decreased safety to the men employed. Consequently the United States Coal & Coke Co. discarded it.

the United States Steel Corporation, is the largest coal producing company in West Virginia; its operations consist of one shaft, one slope and twelve drift openings. The shaft, which is 180 ft. deep and penetrates both No. 3 and No. 4 Pocahontas seams, has not been in operation since 1909. It is now used as a drainage outlet for the northern portion of the property.

The mines on this property at first were developed by the panel system. These panels were about 1,000 ft. square, and were developed with a set of main headings, comprising one haulage road and two airways. The intention was to drive the room headings from these main headings to the end of the panel before any room work or rib extraction was started. This method was soon found defective in the following principal respects: (a) Excessive time spent in development; (b) short life; (c) expense of mine roads, side tracks, etc.; (d) expense of ventilating; (e) expensive to operate principal haulage; (f) excessive quantity of coal left as barrier pillars; (g) loss of large percentage of this coal when pillars are removed; (h) large area remaining open for a given tonnage; (i) large quantity of equipment required for a given output; (j) excessive

cost of proper supervision, due to scattered workings; (k) dangerous conditions, for the above reasons.

From a portion of mine No. 6, originally developed by the old panel system in 1904, ribs and pillars of rooms that were driven at that time are still being extracted, and it will require not less than six years more to exhaust this part of the mine. Fig. 3 shows a plan of the old system, now discarded by this company.

The principal methods of mining in the Pocahontas field were described in 1915 by William H. Grady, in a paper, "Cost Factors in Coal Production." Fig. 4 is one of a large number of illustrations in Mr. Grady's paper; it shows the details in the exploitation of two individual panels of different shapes. These systems, with slight modifications, are still in use throughout the field.

The Pocahontas No. 3 and No. 4 are the fourth and fifth seams from the bottom of the series, the interval between them being 65 to 70 ft. A typical section of each seam is shown in Fig. 5, that of No. 3 being as it occurs in mine No. 10, while the section of No. 4 seam was measured in mine No. 6; these mines are about 1½ miles from Gary and located in different valleys.

#### EXPLOSIVE GAS IS OF FREQUENT OCCURRENCE

The slate overlying No. 3 seam thins out in a northeasterly direction until it practically disappears, while the slate overlying No. 4 seam thickens in a southeasterly direction until it reaches a maximum of 5 ft., before it begins to thin, and it entirely disappears in the extreme southwestern extent of the seam. The roof of No. 4 seam varies from a sandstone, lying directly over the coal, to a laminated coal and slate (known locally as "rash"), which gradually appears between this sandstone and the coal until it has reached a thickness of 5 ft.; it is then gradually displaced in a southwesterly direction, from top down, by a slate which attains a thickness of 6 ft., when it in turn gradually disappears. Where slate or black "rash" is over the coal, it renders the mining conditions difficult and dangerous.

Till quite recently explosive gas has not been present to add to the ventilating problems of the mines of the United States Coal & Coke Co.; however, in those parts of the seam under heavy cover, a small quantity of explosive gas is found, which increases as the mine workings advance. The seams dip northwesterly from 2 to 8 per cent.

About 97 per cent of the coal in the Pocahontas region is mined through drifts on the mountain sides at various distances above the stream. The entrances are protected in various ways, such as timbering, stone side-walls with I-shaped cross beams, stone side-walls with stone, brick or concrete arches.

From the drift openings coal is delivered to the railroad by electric trams, steam trams, gravity planes, aerial tramways, retarding and scraper conveyors, pan conveyors and chutes.

The description of development plans will be confined to the practice followed by the United States Coal & Coke Co. at its mine No. 6, operating in the No. 4 Pocahontas seam, this plant being fairly typical of mining practice in the Gary district.

The general plan (Fig. 3) is a room-and-pillar continuous advancing and retreating system. While advancing, room ribs, heading stumps and heading chain pillars are extracted. Thus the full production of the mine can be constantly maintained from a short period

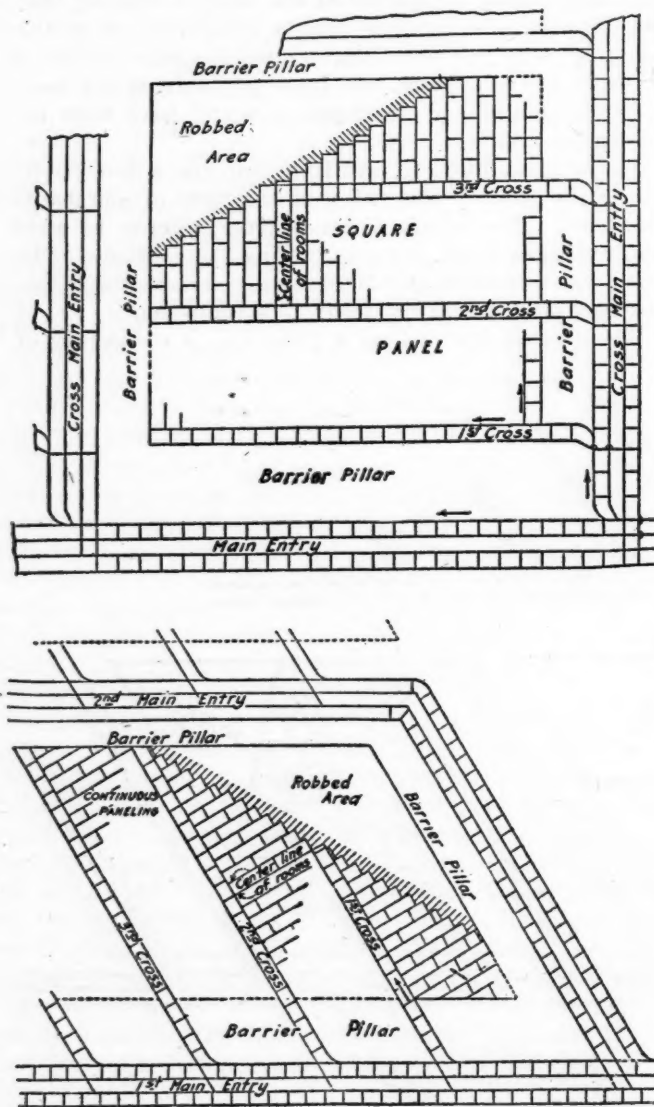


FIG. 4—TWO TYPICAL PLANS FOR WORKING A PANEL

These are standard methods in the Pocahontas region. Three cross entries are driven up for their full length and then rooms are started, the first room being at the end of the heading and the last against the barrier pillar of the cross main entry. The rooms are pillared retreating, giving a long pillar line which passes from cross entry to cross entry.

<sup>1</sup>Trans. (1916), Vol. 51, p. 138; previously published in Bulletin 101 (May, 1915), p. 1,035.



after beginning until the mine is practically exhausted. Each section is planned for a minimum capacity of 1,000 tons per shift, both while advancing and retreating; in practice this output is being exceeded.

During the advancing period the headings are continually progressing and rooms are being driven on the "inbye" end of them. As soon as these rooms reach their limits, the pillars are withdrawn, resulting in complete extraction over that portion of the section allotted to the advance. By this plan the room headings last throughout the life of the mine and become as long as the property; some such headings are now more than 6,400 ft. long and have two miles further to go before reaching the boundary. The life of one of these sections may be from 10 to 40 years.

#### CONCENTRATION OF WORKINGS AFFORDED

This method affords simplicity of ventilation, transportation and drainage; concentrates the workings and permits a maximum of superintendence. No standing pillars, with resultant open work to be ventilated, are left for later difficult and expensive extraction. It is never more than two years from the time a room is started until it has reached its limit and its ribs have been robbed back to the heading.

On all haulage roads 0000 grooved trolley wire is used, and both rails are bonded. Feeder lines of 1,000-, 000 and 500,000 circ.mil, paralleling the trolley wire, to which the latter is connected every 200 ft., are carried on the same hanger blocks. (See Figs. 7 and 8.)

The power from a central power plant is distributed to substations, one of which is at the mine entrance and the other 9,000 ft. inside. These substations are designed to run in parallel and furnish an even distribution of power at the working face and along the haulage roads. Direct current of 275 volts is used for all underground power, including lighting, haulage and undercutting.

#### ELECTRIC LIGHTS ONE HUNDRED FEET APART

On all haulage roads, electric lights are installed at 100-ft. centers and on curves one is set every 75 ft. In rooms two or more electric lights are maintained at the face, and one light at the room switch on the heading. (See Fig. 9.)

During robbing the measures generally break to the surface, and as there is no alluvial deposit or surface soil on the tops or sides of the mountains, the cracks remain open and a large quantity of water enters the worked-out areas, especially at certain seasons of the year.

The mines are drained by a tunnel driven in the coal seam as near as possible to the low side of the property. All water from this and adjacent higher mines drains to this waterway. This tunnel is part of a drainage system extending through other mines from the lowest outcrop point on the Tug River. During a period after heavy rains, weir measurements showed 12,000,000 gallons of water passing through the drainage tunnel in 24 hours. This water came chiefly from robbed areas.

All undercutting is done with electrically driven shortwall mining machines which are equipped with cutter bars varying from 6½ to 12 ft. long. Room and heading coal and also rib coal, when solid, is undercut. The coal in stumps and pillars which have sufficient weight upon them to crush the coal is removed by hand. The cover over the working places in mine No. 6 at present is so heavy that it is necessary to undercut only

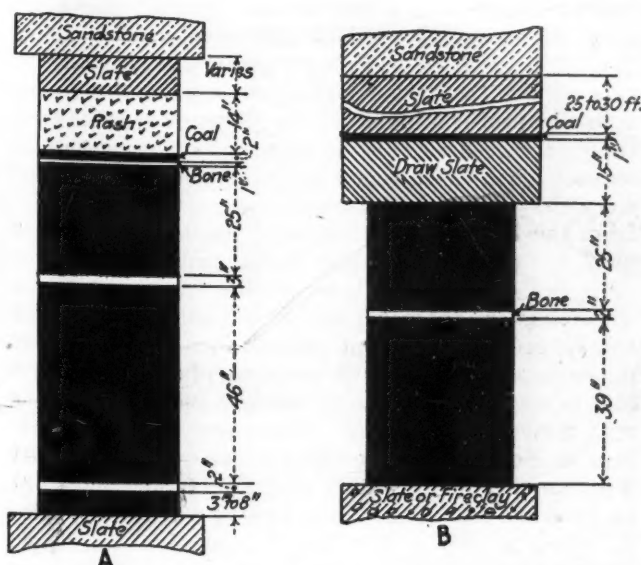


FIG. 5—CROSS SECTIONS OF LEADING GARY SEAMS

A is No. 3 seam, the fourth from the bottom of the Pottsville series. The slate thins out in a northeasterly direction. B is No. 4 seam. In places the sandstone is found immediately over the coal but in other places it is 30 or more feet above it. The draw-slate may change to laminated coal and slate, and in that case is dangerous.

42.5 per cent of the coal mined. Table I shows the work done by all mining machines in the company's properties:

TABLE I—PERFORMANCE DATA OF MINING MACHINES

Mine No.	Days Worked	Places Cut	Machines in Service	Places Cut Per Machine Per Day	Tons Machine Coal Per Machine Per Day
2	241	9,512	7	5.6	193
3	248	11,759	7	6.8	103
4	245	6,751	7	3.9	114
5	234	3,291	3	4.7	175
6	239	5,960	9	3.2	129
7	240	13,217	9	6.1	185
8	235	7,426	4	7.9	195
9	242	13,925	12	4.8	140
10	227	10,275	11	3.9	82
11	247	19,534	10	7.9	136
12	240	7,019	4	7.3	250

In the above tabulation "Machines in Service" means the total number of machines fit for duty. The figures under "Tons per Machine per Day" are based on the total number of machines at each mine and do not show the actual individual performance because the plants have more mining machines than necessary, these having been provided for the old panel system of mining.

When blasting machine-mined coal in narrow places the coal is likely to be broken excessively but in wide places the size of the product is the same as that of hand-mined coal. In places 36 ft. wide or more, and sometimes in places as narrow as 11 ft., where the cover exceeds 600 ft., the weight of the mountain breaks the coal down from the face while it is being undercut.

Holes for blasting coal are of 1½ in. diameter and are drilled by hand with one-man twist augers. Their average depth is nine-tenths the depth of the cut. The miner drills and charges his holes with a permissible explosive and electric detonator, and tamps them with clay brought from the outside. The charge is fired by the assistant mine foreman during the day shift, with a pocket battery which he carries for that purpose.

Rooms are turned on a schedule which permits pillar extraction to commence immediately upon their completion (Fig. 6). They are spaced on 125-, 90- and 75-ft. centers, and are driven 60, 36 and 24 ft. wide, according to thickness of cover and roof conditions.

Only one track is required in places 18 ft. or less in

width. Track is laid next to the "outbye" side of the room in advancing sections and is aligned by sights. Places 36 to 40 ft. wide have two tracks, one on each side of the room, and sights are used to keep these rooms in proper alignment. In rooms 60 ft. wide three tracks are used, one in the center of the room and one on each side. With rooms 36 ft. or more in width only one cross-cut is driven between rooms, this being 80 ft. from the heading; ventilation is maintained from this point by a wooden brattice in the center of the room. (See Fig. 10.)

Partings in the seam are picked out by the miners and gobbled. The amount of bone thus removed by the miner is approximately 5 per cent of the seam. The coal is soft, has no definite cleavage planes and breaks with a columnar fracture. There are three bone partings in No. 4 seam, one being a few inches above the floor, another in the middle of the seam, and one 2 or 3 in. from the top. The bottom parting and the coal below it, which is only a few inches thick, are not mined. The middle and top partings are mined with the seam and partly removed by the miner before loading; but the 10 to 14 in. of overlying "rash," being soft, breaks into small particles, mixes with the coal and is loaded with it.

No timbering is permitted on haulage roads without written permission of the general superintendent, which is given only in exceptional cases. Where the roof is bad it must be taken down until all loose material is removed. Concrete posts are used on main headings where permanent support is required.

Timbering in rooms follows a standard plan (Fig. 10). Timbers having a minimum diameter of 5½ in. are used. A row of "road posts" is set parallel to the room

track, 2 ft. from straight track or 30 in. from curved track, and 3 ft. apart. A cap piece 6 ft. long, placed on the top of each road post, extends over the track. The other timbers, "gob posts," are spaced 6 ft. apart and use a cap piece 4 ft. long. Timbers are maintained at a distance not greater than 6 ft. from the working face, irrespective of condition of roof, and closer where necessary.

No preservatives are used and there is no general scheme for recovering timber, only a small portion of which is reclaimed. The timber is delivered to the working places by locomotives and mules during the day shift, and placed by the miner as required. Table II shows the amount of timber per ton and per acre used for all purposes, including mine-car repairs, ties for mine roads, caps, props and miscellaneous:

TABLE II—TIMBER CONSUMED, BOARD FEET

Mine No.	Average Thickness of Seam, Ft.	Board Ft. per Net Ton	Board Ft. Per Acre
2	5.75	2.8	32,164
3	4.53	5.6	48,600
4	6.32	4.0	66,075
5	6.94	3.4	40,318
6	6.18	1.4	16,263
7	6.37	3.5	45,453
8	5.97	4.2	43,750
9	7.36	2.3	26,611
10	5.52	5.2	47,685
11	5.35	4.4	45,411
12	5.04	2.6	33,083
Average	6.06	3.3	38,163

Mine tracks and hauling equipment have been standardized. A gage of 48 in. is standard for straight track, 48½ in. on haulage curves, and 49 in. on room curves. The standard radii of curves and switches are 100, 150, 200 and 300 ft. for roads and 30 ft. for room turnouts. Rails are 60-lb. on main haulage roads, 40-lb. on room headings, and 20-lb. in rooms and temporary

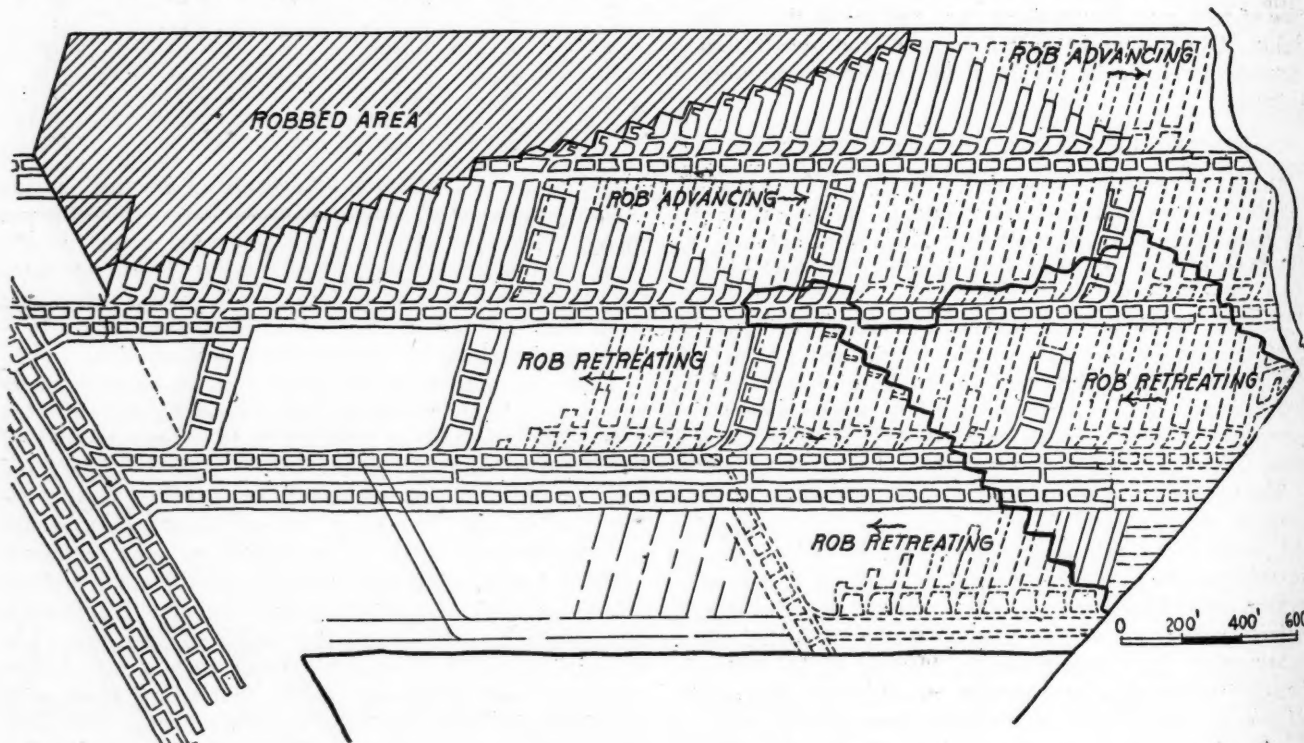


FIG. 6—GENERAL PLAN OF MINE NO. 6, UNITED STATES COAL &amp; COKE CO.

Usually when rooms are driven and room pillars are drawn advancing the headings are maintained for years till their stumps and pillars can be withdrawn retreating. This withdrawal is in itself at times a matter of years. The presence of these heading pillars, necessary as they are, is to be regretted, for they divide the lines of fracture of the pillared area and, as has been

said, the heading also has to be maintained for long periods of time despite the fact that it is subject to the excessive stress resulting from the fact that the coal on either side has been extracted. In contradistinction, in this method the headings at No. 6 Mine are provided with cross roadways so that the pillaring line can be extended to take in the heading pillars,

approach being made to the heading thereafter by some one of the cross roadways. The main road, however, is kept well in solid coal and is mined retreating both as to rooms and pillars. With this arrangement the tonnage is maintained both on advance and in retreat. With thick coal the cross roadways are constructed at little cost.



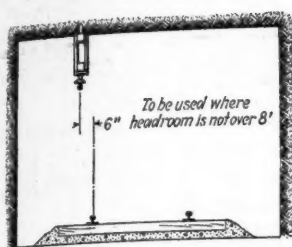


FIG. 7—STANDARD TROLLEY SUSPENSION FOR AN 8-FT. HEADING

The track is set 6 in. further from the rib than the line of the trolley. The bracket, being braced, does not work loose despite its projection from the roof.

headings. The main haulage road is double tracked and has no grade in excess of 2.5 per cent. Before any permanent track is placed on the main or branch haulage roads, a profile is made and it is graded according to elevations.

Room track is placed and maintained by the miners; all turns and switches are placed by company men. Ties  $5\frac{1}{2}$  in. x  $6\frac{1}{2}$  ft. are used under 60- and 40-lb. steel rails; ties  $4\frac{1}{2}$  x 5 in. x 6 ft. are used under 20-lb. steel rails, where conditions do not warrant the use of steel ties. On haulage roads, ties are spaced not over 24 in., and steel ties for temporary track are spaced not less than 36 in. In headings the temporary track is torn up, graded and

TABLE III—LABOR EFFICIENCY

	Tons Per Man-Hour	Man-Hours Per Ton
Miners in headings, including machine runners, (best miners usually assigned to headings).....	2.115	0.463
Miners in rooms, and at pillars, including machine runners.....	1.870	0.534
Miners on slate or rock work (estimated).....	2.500	0.400
All miners.....	1.910	0.523
All underground day labor.....	1.850	0.540
Men on transportation system.....	5.570	0.179
All surface labor, excluding office force.....	3.380	0.295
Total organization, excluding general office and engineers.....	0.728	1.365

laid permanently at such intervals that the end of the permanent track is never more than 150 ft. from the face.

On haulage roads the minimum clearance from any part of a locomotive or car is  $2\frac{1}{2}$  ft. on each side, and the least vertical distance is  $5\frac{1}{2}$  ft. above the top of the rail. Where grades exceeding 2 per cent are encountered, the floor or roof is excavated to allow as favorable a grade as possible. Room headings are on an average grade of 0.5 per cent in favor of the loads.

No side tracks, or partings, are required by the system of transportation in use. Mules are used only for hauling cars into and out of the working places, and hence can serve a larger number of places with less work than under a system involving side tracks.

The locomotive enters the room heading, pulling a trip of empty cars, which are distributed at the mouths of the various working places by disconnecting them from the rear end of the trip. At the same time it pushes together the loaded cars placed on the heading by the mules, until its trip is assembled. The motor then passes through a haulageway to a parallel heading and thence in

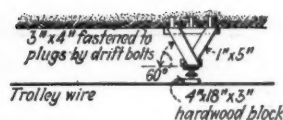


TABLE IV—CLASSIFICATION OF DAY LABOR

Inside Labor:	Per Cent	Outside Labor:	Per Cent
Mine foremen.....	0.60	Clerks.....	1.26
Fire boss.....	0.16	Janitors.....	0.09
Assistant mine foremen.....	6.13	Stablemen.....	0.94
Roadmen.....	9.27	Teamsters.....	2.06
Day labor.....	22.70	Garbage men.....	0.45
Bratticemen.....	1.29	Laborers.....	4.85
Wiremen.....	1.36	Labor foremen.....	0.48
Pumpers.....	0.78	Pumpers.....	0.77
Drillmen.....	0.19	Electricians.....	0.93
Machine repairmen.....	0.22	Motor repairmen.....	1.36
	42.70	Substation men.....	1.65
Transportation:		Blacksmiths and helpers.....	1.75
Haulers (mule).....	13.81	Car repairers.....	4.63
Motormen.....	3.47	Carpenters.....	3.58
Brakemen.....	3.33	Tipplemen.....	9.83
Trappers.....	0.53	Greasers.....	0.59
	21.14	Plumbers.....	0.19
Total inside day labor.....	63.84	Masons.....	0.18
		Machinists.....	0.17
		Watchmen.....	0.05
		Supply clerks.....	0.13
		Painters.....	0.15
		Sanitary inspectors.....	0.07
		Total outside day labor.....	36.16

the direction of the tippie; these haulageways from the main heading to the room heading are driven at intervals of 800 ft. (See Fig. 6.)

Usually a 13-ton electric locomotive will gather from the mouths of the working places and deliver to the outside 600 to 700 tons of coal per day when the round trip does not exceed four miles. From five to seven haulers and seven to ten mules, depending upon the grades in the working places, are required to gather the coal hauled by one locomotive.

Wooden mine cars of 93 cu.ft. capacity are used. The axles are 3 in. in diameter and run in plain bearings. The wheels are of cast iron, 18 in. in diameter and run loose on the axle.\* The wheelbase is 48 in., the same as the gage.

In 1921 each car made an average of 1.7 trips per shift. At that time 508 mine cars were in service at this plant. At present the average is over two trips per shift. In 1919 each car traveled an average of 878.4 miles loaded, and made an average of 507.7 round trips, the average haul at that time being 1.723 miles each way; it thus performed 3,039 ton-miles of work. In 1921 the cost of mine-car maintenance per ton was \$0.0422, of which amount \$0.0179 was for labor and \$0.0243 for material.

Four 13-ton electric locomotives and one 26-ton tandem locomotive are used for all gathering and main-

\*Steel wheels are now being used.—EDITOR.

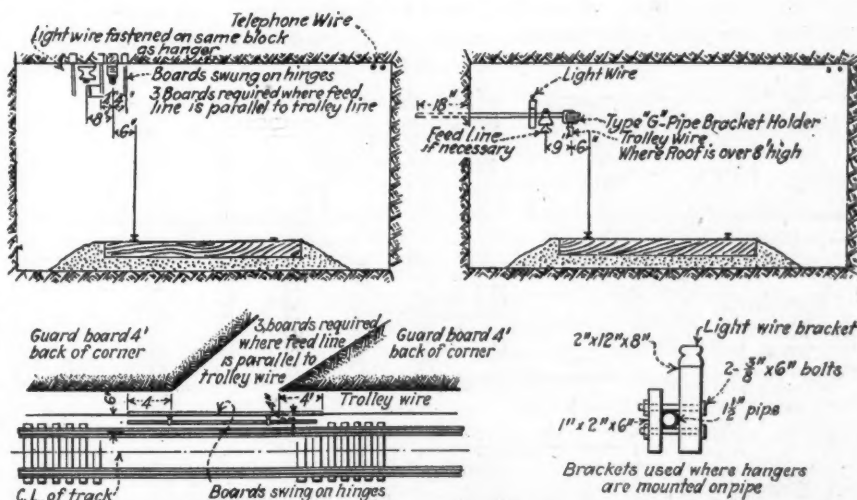


FIG. 8—STANDARD WIRING SUSPENSION AND PROTECTION

Where the roof is high the wire is suspended from a horizontal arm which carries also the electric line for lights, the feed cable, if any is needed, and the trolley wire.

TABLE V—SCALE OF WAGES FOR DAY LABOR; LATE IN 1922

Occupation	Per Hour	Occupation	Per Hour
Stableman (per month)....	\$145.00	Laborers, inside.....	\$0.70
Teamsters.....	0.60	Haulers, inside; mule....	0.80
Carters.....	0.55	Motormen.....	0.80
Mason tenders.....	0.55	Boss drivers.....	0.95
Outside laborers.....	0.40	Motor brakemen.....	0.84
Chargers.....	0.75	Loaders under tippie....	0.70
Charger trailers.....	0.60	Dumpers.....	0.70
Car shifters.....	0.55	Car catchers.....	0.65
Draughters.....	0.55	Car pushers.....	0.65
Oven waterers.....	0.55	Car droppers.....	0.70
Coke machine boss.....	0.65	Pumpers, inside.....	0.75
Outside pumper and pipeman	0.65	Checkman.....	0.65
Watchman.....	0.55	Tippie foreman.....	0.94
Substation man.....	0.60	Greasers.....	0.60
Crusher repairman.....	0.65	Picking-table men.....	0.55
Blacksmith.....	0.90	Slate dumper.....	0.55
Slate picker.....	0.55	Bratticeman.....	0.80
Assistant mine foreman....	0.95	Wireman.....	0.80
Shop foreman.....	0.90	Motor repairman.....	0.85
Machinists.....	0.90	Mining-machine repair man	0.85
Carpenters.....	0.80	Masons.....	0.80
Car repairman.....	0.90	Machinery inspector.....	0.85
Roadmen.....	0.89	Firemen.....	0.75

haulage work. The four smaller locomotives frequently handle as much as 875 tons apiece; their average for 1921 was 612 tons each per shift. The tandem locomotive hauls from 1,662 to 1,750 tons per shift, with a maximum haul of 12,000 ft. The most advanced workings are 17,000 ft. from the tippie.

The company employs no so-called contractors; miners and machine runners are paid on a piece basis, and loaders on a car basis (Table VI). Day labor is paid by the hour (Table V).

Table III gives the output, in tons per man-hour, based on records for May and June, 1922, when 1,027,795 short tons was produced.

While no satisfactory records are kept from which the percentage of labor turnover can be figured, it is believed to be small as compared with other mining communities. Many of the employees have been working for the company 15 to 18 years. The superintendents employ all men and discharge them for defective work. Mine foremen have authority, under the state mining law, to discharge for infraction of the mining laws.

Table V gives the wage scale in force at the close of 1922, for miscellaneous day labor, mostly on the outside; the length of the shift is 9 hours.

Table VI gives the coal mining and loading prices in force at the close of 1922. Miners in this occupation usually work about 8 hours a day.

Table VII gives the consumption of power during May and June, 1922 when the total production was 1,027,795 net tons, the figures including all transmis-

sion, transformer, and conversion losses. In Table VIII is given the cost of power, per ton mined for various purposes.

Table IX distributes the cost of material and supplies not previously included in the cost of power; the percentages are based on the total cost of these materials, not on the total cost of production.

Safety is the first consideration in all plans of organization, mining, construction, installation and operation. Specifications for all machinery must call for proper guards before quotations are requested. A standardized system of mining was devised as the best means of reducing the hazards of the work; the standard clearance on all headings and standard timbering in all rooms, as well as the removal of all slate in the headings, are among the most efficient provisions that have been adopted. Premiums are paid monthly to underground foremen for good accident records.

Frame dwellings are provided, all of which have electric lights in every room. Artesian wells have been drilled to supply water for all purposes, and the water is filtered. Running water is piped into all houses, and

TABLE VI—COAL MINING AND LOADING RATES; LATE IN 1922

Machine Rates		Coal Loading Rates	
Room up to 24 ft., with 8-ft. cutter bar, or less:		Room.....	Per Car
Runner.....	\$1.70 per place	Heading.....	\$2.00
Helper.....	1.30 per place	Wet heading.....	2.12
Room over 24 ft., with 8-ft. cutter bar, or less:		Mining and loading by hand (pick)...	2.15
Runner.....	\$1.90 per place	Slate.....	1.80
Helper.....	1.55 per place	Black rash.....	1.15
Room up to 24 ft., with cutter bar over 8 ft.:			
Runner.....	\$1.80 per place		
Helper.....	1.50 per place		
Room over 24 ft., with cutter bar over 8 ft.:			
Runner.....	\$2.30 per place		
Helper.....	1.85 per place		
Room over 45 ft., with cutter bar over 8 ft.:			
Runner.....	\$2.45 per place		
Helper.....	2.00 per place		

TABLE VII—POWER CONSUMED, PER TON AND TOTAL

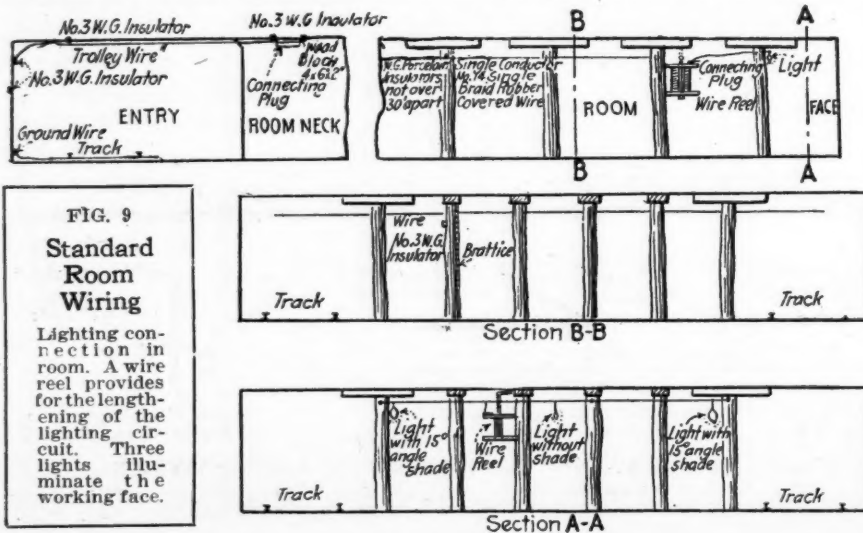
	Kw.-Hr. Per Ton	Total Kw.-Hr.
Cutting.....	0.25	256,949
Hauling.....	0.77	791,402
Pumping (inside).....	0.138	141,836
Pumping (outside).....	0.613	630,038
Ventilating.....	1.372	1,410,135
Tippie machinery.....	0.225	231,254
Lighting (outside).....	0.3	308,339
Lighting (inside).....	0.075	77,085
Shop and miscellaneous.....	0.2044	210,037
Total.....	3.9474	4,057,075

a drain system is provided. A number of the dwellings have baths and other modern conveniences.

Concrete and macadam streets and concrete sidewalks are laid on the principal streets, with concrete walks to

the front and back doors of many of the houses. The Americans, both white and colored, and the foreign employees live together in harmony in these towns; the only segregation requirement is that white and colored shall not live in the same house. Churches for white, colored and foreign employees are situated at the company's plants.

Separate schools, managed by the district board of education, are provided for white and colored employees; these are rated as "First Class" by the State Department of Free Schools. The smaller children are taught at local schools, close to their homes, while junior and senior high schools are centralized at five

FIG. 9  
Standard  
Room  
Wiring

Lighting connection in room. A wire reel provides for the lengthening of the lighting circuit. Three lights illuminate the working face.



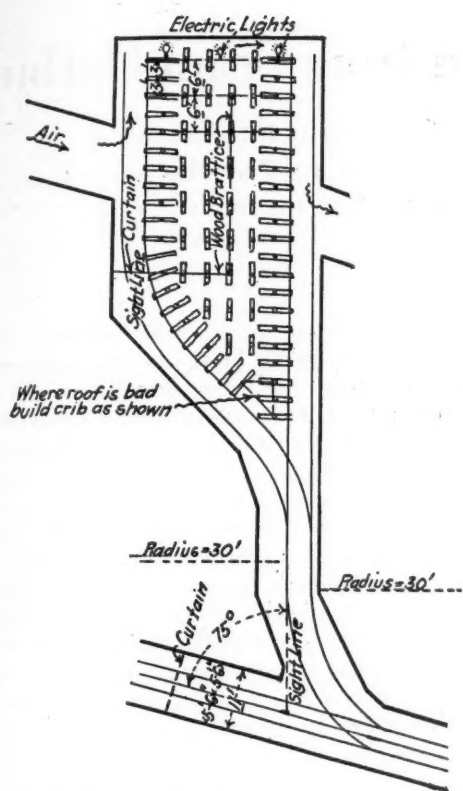


FIG. 10—STANDARD TIMBERING FOR TWO-TRACK ROOM

Where necessary temporary posts are set to protect the men while loading coal. The foremost posts are never more than 6 ft. from the working face. The distance from the rail to the outside of the posts is 24 in. on straight track and 30 in. on curves. Track is maintained on both sides of the room. When rooms exceeding 36 ft. in width are permitted the extra width must be put between track centers and the distances between props must be changed accordingly, the same number of these supports being used. In wide places where the top is bad cribs should be built.

different points on the plants of the company; the larger children are carried to school in automobiles during the entire school year. Gary High School is an accredited entrance school for the University of West Virginia and several other universities of equal standing.

Amusements are provided by motion picture theaters, bowling alleys, pool rooms, baseball grounds, tennis courts and the various athletic clubs. All employees can participate in these amusements. Club houses are provided among the various plants of the company, in which board and lodging are provided for the single employees and such married people as do not care to keep house. These club houses are used also for community gatherings. The recreation of the younger people generally is conducted under the auspices of the church or school authorities.

TABLE VIII—DISTRIBUTION OF POWER COST, PER TON MINED	
Mining.....	\$0.00250
Hauling and hoisting.....	0.00995
Pumping.....	0.00138
Ventilation.....	0.01372
Shop and miscellaneous.....	0.01192

Provisions, household necessities, etc., are supplied through an affiliated concern, the United Supply Co., which conducts a mercantile business at eight different points, in and around Gary. Each store has seven departments. As the stores purchase their goods in large quantities for cash, and their business is conducted on practically a cash basis, their prices to the consumer, after allowing for a fair profit, are lower than those of merchants in surrounding towns, such as Welch, Wilcoe and Anawalt.

TABLE IX—DISTRIBUTION OF COST OF MATERIALS

	Per Cent		Per Cent
Mine roads.....	18.66	Cleaning, crushing and washing coal.....	0.25
Mine cars.....	8.45	Fire protection.....	0.06
Haulage system.....	14.65	Other machinery repairs.....	0.50
Hoisting and dumping.....	1.00	Safety.....	0.06
Shaft, tipples and bins.....	0.31	Welfare.....	0.13
Ventilation.....	3.57	Miscellaneous.....	4.83
Drainage.....	1.31	Electric lights.....	2.88
Machine mining.....	4.45	Pit posts, caps and crossbars (3.3 board ft. per ton).....	24.49
Explosives (0.117 lb. per ton).....	1.31		
Horseback, rock and refuse.....	0.25		
Live stock.....	10.65		
Lubricants.....	2.19		100.00

Ground is rented by the United States Coal & Coke Co. to outside parties for running stores, devoted principally to the coarser grades of merchandise, such as feed, flour, etc., delivering to the purchasers by trucks. All employees are paid in cash and they are under no obligation to trade at any particular store.

A nurse has been employed by the Board of Education and the local chapter of the American Red Cross. This nurse visits the schools and examines the children, particularly for physical defects, but also for cases of malnutrition and other matters affecting their health. A dental clinic is provided by the county. The dentists visit each school, examine the children's teeth and do such dental work as is necessary; all without charge to the parents.

### Can Electrical Detonators Be Fired by Stray Current and What Is the Cure?

AS THE result of an accident which happened at the Birdseye mine of the Hudson Coal Co., in the anthracite region of Pennsylvania, last November a conference was called by the State Department of Mines to investigate the possibilities that shots may be exploded prematurely by stray currents passing through their electric detonators. The meeting, which was attended by representatives from the anthracite mining companies, the powder companies, the street railway companies, the state department of mines and the U. S. Bureau of Mines, was held in the office of the Glen Alden Coal Co. at Scranton, Feb. 21, District Mine Inspector Evans acting as chairman.

Investigations made after the Birdseye accident indicated that after the wires were connected to the leads of the detonator and while the men were leaving the working place, the charge by some unknown means was discharged. The tests made by the Hudson Coal Co. showed stray currents in the mine. In fact, a voltmeter test showed 12 volts between a drill in the coal and the rail of an unbonded track nearby. In some places readings as high as 4 volts were taken between two drills on the coal. No ammeter readings were taken.

Doubt was expressed whether with such voltages enough current would flow to fire a detonator. A powder man stated that only with a current of one-fourth of an ampere or even more could a detonator be fired.

As a precautionary measure the Hudson Coal Co. is trying out a duplex rubber-covered wire for shotfiring. It is hoped by this means to eliminate the possibility of the lead wires picking up stray currents or of coming in contact with charged wires or open joints in the track.

No positive conclusions were reached at the meeting, the matter being laid over for future discussion and investigation. In the meantime those interested will make investigations of their own to supplement the work of the committee.

## Precautions Taken to Guard Men from Seam Outbursts

Drillholes Serve to Reveal Danger but Are of No Value for Removing Gas—Limitations of Driving Rate—Jarring Shots to Provoke Outbursts—Means of Rapid Escape When Blowouts Unexpectedly Occur

BY F. C. CORNET\*  
New York City

**I**N ORDER to protect the miners against the disastrous effects of blowouts, which occur so frequently in the deeper seams of the Belgian mines, it early became the general practice in such workings to drill the face with boreholes so as to drain out the gas contained in the seam. This practice long ago was found to be utterly ineffective, a worthless and illusory precaution.

Before the workings had penetrated into the seams now classed in the third category, which includes all beds subject to blowouts, boreholes only rarely produced any violent emission of gas and fine coal. The miners termed these rare manifestations "volcanoes" (*volcans*). It was believed that they resulted from the drill running into a pocket where gas was confined under high pressure. Although sometimes violent enough to throw the drill out of the hole and far to the rear, "volcanoes" generally were of short duration, causing fatalities only when the gas was ignited at a broken safety lamp.

### DEEPER BOREHOLES AND MORE OF THEM

As operations entered more deeply into the seams subject to blowouts, volcanoes became more and more frequent and assumed a more and more vicious character. Deeper auger holes and more of them were prescribed, the idea continuing to prevail that after the holes had liberated the gas held in the empty spaces of the seam the latter were safe to a depth at least equal to that reached by the auger. An occasional volcano was thought to make conditions safer still. Therefore great was the surprise of management and men when it was shown repeatedly by experience that faces well drilled and supposedly well drained of gas would blow up without any warning other than that of the underground thunder and crushing of timbers to which the men had been accustomed in seams at a higher geological level, including those in which no gas is ever found.

### SLOWING PROGRESS TO REDUCE ACCIDENTS

Several companies that were working the lowest seams that at that time had been reached conceived the idea that the rate at which the workings were advanced should be restricted, and when they applied that method they were rewarded with a certain degree of success. It was not, however, until 1879, after the spectacular Agrappe blowout that the Belgian Department of Mines formulated and made compulsory a comprehensive system of regulations concerning boreholes and a limitation of the driving rate in all mines subject to these manifestations (*dégagements instantanés*).

As most of the boreholes ceased to show any sign of gas after they had released what was contained in the cleavages and other empty spaces which they traversed the miners frequently attained a false feeling

of security. This assurance still continues to some extent, despite the many blowouts that have occurred after the auger has revealed no conditions of a dangerous nature. But if, for seam-drainage purposes, holes drilled through what I have designated as safe coal are absolutely inadequate (for reasons previously explained) the fact remains that as a means of detecting a crushed zone lying ahead in the solid no substitute has been so far found for them. The same may be said of their use in *bouveaux*,\* where they constitute the only means of ascertaining how near is the seam ahead. Even when the formations are regular, the engineer in charge seldom knows with an approximation closer than 5 or 8 ft. where the next seam will be met. In the highly disturbed territory to the south of the field it is nearly impossible to tell within 30 or 40 ft. how close the nearest seam is. Worse yet, the *bouveau* may miss the seam entirely, passing clear above or under it, to meet it perhaps only where it next turns upward or plunges downward as the case may be.

When workings proceed through hard or comparatively hard coal (meaning coal that, after being undercut requires wedging or picking before it will fall away from the face) the conditions as a rule will remain reasonably safe so long as the auger holes driven ahead reveal no marked decrease of coal cohesion and provided the daily rate at which the faces are driven be not too great.

### DANGER OF SUDDEN DISCOVERY OF CRUSHED COAL

We have seen in the previous article† how a zone of unsafe coal may be close ahead, although still unrevealed by the auger holes, so close indeed that the advance of the face in the course of a single working shift may reduce the resistance of the barrier of safe coal till it no longer can oppose the expansion of the coal in the unsafe zone ahead. This causes the crushed coal to blow out into the workings in such a manner as to imperil the lives of the employees. Too rapid driving may cause this barrier to break down without the boreholes affording any indication that such a catastrophe is about to happen.

No matter how safe the driving rate adopted may seem to be, the advance work at the face must be distributed over as great a part of the working shift as will be found practicable. The work also must progress evenly from end to end of the face. When, as is generally the case in Belgium, several faces arranged in a group advance together into the seam, one should not be driven any faster than another. Suppose, for example, the driving rate adopted is 4 ft. a day and the working shift is of 8 hours' duration. To advance the whole 4 ft. during the first two hours of the shift

\*Tunnels through rock driven to connect a shaft with pitching coal seams.

†"Blowouts in Belgian Coal Seams and the Way in Which These and Like Phenomena May Be Explained," *Coal Age*, March 1, 1923, pp. 367-372.

\*Consulting engineer.



instead of distributing the work over, say, six hours, would be equivalent to a driving rate of 12 ft. per day instead of 4 ft.

To form an idea of how difficult it is to tell what is a safe driving rate, it is only necessary to point out that it varies from seam to seam, that it depends on the condition of the strata, including, of course, the seams themselves, and that even in a given seam it varies with the cohesion, pitch and regularity of the coal. For example, a certain driving rate which may be perfectly safe at a distance from a fault, syncline or anticline may prove positively dangerous in the neighborhood of such a geologic disturbance.

#### EXPERIENCE SUGGESTS SAFE DRIVING RATE

A rate that may be safe in a strongly pitching part of a seam may be so no longer where the seam is flatter, or vice versa. With known seams, or rather, groups of seams, the safe driving rate under varying conditions may be determined from past experience, care being taken to give safety the benefit of the doubt whenever there is any uncertainty. When first reaching a group of seams at a new and lower geological level, the engineer always meets conditions more difficult to control than any he encountered at higher levels. But if he is really experienced and conservatively inclined he will find, eventually and without unnecessary loss of life, a rate of driving that is reasonably safe.

No matter how safe the driving rate may be, the day always will come when an area will be approached for which that rate will not afford the desired safety. Nevertheless even then the slow driving rate usually will save the day, for, fortunately, as long experience has shown, the familiar cracking of timbers, first wind and underground thunder precedes the collapse of the face by a longer period when the rate of driving has been conservative than it does when the rate has not been so limited. This is of great importance, for men have been known to lose their lives because they lacked a few seconds of time in which to turn a corner or drop down a rope to the gangway below.

#### LAST TEN FEET DRIVEN WITHOUT EXPLOSIVES

Until recently it was provided that when a *bouveau* was shown by a drillhole to be 10 ft. from a seam, nine other holes were driven to reach the coal, whatever that distance might be. After this all work was suspended for 48 hours. This was in conformity with the old idea that the boreholes would drain the gas from the seam, making the latter less likely to blow out when the *bouveau* would finally approach, reach and pierce it. The rules provided that explosives might be used in driving *bouveaux* until the face was found to be within 10 ft. of a coal seam. Thereafter the passageway had to be driven without the aid of explosives until it was once more in the solid rock beyond the seam.

Mining men accustomed to tunneling through slate and sandrock will be able to imagine what it costs to drive that length of *bouveau* without the aid of explosives, using only a drill, wedge, pick and sledge. The examples I have given and the facts I have related in a previous article regarding blowouts in *bouveaux* do not indicate that the restrictive measures imposed for over 40 years on *bouveau* driving had much success. It is a fact that this kind of work was considered so risky that it always was difficult to get men to do it, even at a large increase in pay.

A policy radically different at last has been adopted

by the Belgian Department of Mines. Not only are explosives allowed in driving the 10 ft. separating a *bouveau* from a seam but no limitation is put on the number of shots that may be fired simultaneously, provided no individual hole contains more powder than the limiting charge for the explosive that is being used.

Ten to twenty holes, depending on the nature of the strata traversed, are fired together from a safe place when none but shotfirers are in the mine. This blast is called the "jarring shot" (*tir d'ébranlement*), for the reason that its purpose is to shake the strata, including the seam, sufficiently to provoke a blowout and to cause it to occur then and there, if conditions are such that one is likely to happen.

The result of this more liberal policy on the part of the Belgian Department of Mines has been evident from the beginning. The new practice has been in operation for thirty months. In this period hundreds of blowouts have been willfully provoked in *bouveaux* and none has caused so much as a scratch to anyone. The material damage has been less in aggregate than would have been done had the blowouts been allowed to occur naturally, as they would certainly have done had they not been made to take place at the operator's own appointed time.

#### ELEVEN BLOWOUTS IN A SINGLE BOUVEAU

In the Mons District between July, 1920, and December, 1922, a *bouveau* was driven a horizontal distance of 2,700 ft. through the lowest group geologically of all those which so far have been reached and operated in Belgium. The *bouveau* passed through sixteen seams in that distance. In eleven instances a blowout resulted. The longest time elapsing between the blast and the blowout was 17 minutes. The five seams that did not blow out were hard at the point where the *bouveau* intersected them, which explains why, although fully as gaseous as the other seams, they remained passive.

The jarring shot was adopted more than twelve years ago in the Gard coal field of France, where the practice is permitted in all parts of the mines instead of being limited, as in Belgium, to *bouveaux*. In the latter country explosives may not be used in and about the coal workings of seams of the third category. Signs abound, however, that Belgian operators will not be satisfied till they also are allowed to produce blowouts at the coal face by shots fired from a safe distance when nobody is exposed to the consequences of any gaseous manifestation that may occur.

With the new methods boreholes are not necessary except for the placing of shots. Moreover, the driving rate ceases to have any importance and may be as great as the operator may find practicable. Shots placed in the coal in sufficient number and so located that their operation will shake the whole face or group of faces operated are fired simultaneously or in series and in rapid succession. The firing is done electrically from a safe distance in the mine by two experienced men, after all other miners have gone home for the day.

When the men arrive in the morning all they have to do, besides loading the coal thrown out by the blast, is to set all necessary timbers and drill new holes in the face. The miners are strictly forbidden to cut into the face with a pick. If the blast of the previous night has left some fissures in the face and some coal looks as if ready to fall out, these conditions must not be disturbed. What one night's blast has left unfinished

must be left for the blast of the following night to complete.

It is easy to understand that when a zone of dangerously crushed coal is critically near, the shots will demolish the barrier of safe coal, which prevents that decrepitated material from expanding into the workings or will so weaken it that it will hold out only for a short time. One interesting example among many similar ones will be cited to show how really preventive is this method:

In a single year in a single seam in the Molière Shaft at Bessèges (Gard, France) forty-four blowouts took place, all of which resulted from shattering blasts fired at night. None occurred otherwise, and not one of them killed or injured anyone. In the whole Gard District not a single man has been hurt by a blowout since Nov. 15, 1912, when, as a result of disobedience to most positive orders, one of the shotfirers, impelled by curiosity, ventured into the workings 10 minutes after the blast, when a blowout took place, by which he lost his life. Although when a blowout is about to occur it generally does so promptly, that is, a few seconds after the shattering blast, it sometimes happens only after several minutes. In at least one instance 20 minutes of delay was noted.

Not a single inflammation of gas or dust has been recorded as yet as the result of a shattering blast. The fact that only safe explosives safely used are permitted in the operation is not enough to account for this freedom of ignition, which must be attributed mostly to the impossibility of the eruption of dust-laden methane taking place simultaneously with the blast. It is the latter that causes the former. Hence they cannot be simultaneous. In a procession of phenomena of this kind an interval of one second, the shortest ever recorded, is considerable compared with the rapidity with which a shot explodes.

#### FRENCH USE SHATTERING BLAST AT COAL FACE

The French did not apply the shattering blast to seams subject to blowouts of methane gas until after they, successfully and for many years, had made use of the same process to provoke outbursts of carbon dioxide in coal seams where this rare kind of gaseous manifestation occurs. These outpourings of carbon dioxide in some mines had happened on many occasions most unexpectedly and had caused the death of many miners. It was natural for the French to think of applying in the case of methane a remedy that had proved efficacious with carbon dioxide, bearing in mind, of course, that the latter being inert while the former is most inflammable precautions must be taken with the one that would be superfluous with the other. As soon as the French Department of Mines became reasonably convinced that with permissible explosives the shattering blast was not likely to prove dangerous in seams subject to methane blowouts, they so advised the Gard operators, who lost no time in taking advantage of the permission to use that method. The results have been explained above.

So far as Belgian mines are concerned, there is no doubt that they will soon be allowed to follow the French example. All they are waiting for is the raising of the embargo put by the Mines Department on the use of any kind of explosive at or near the coal face in mines of the third category. There is no reason why a method which is good to the south of a boundary line should not prove valuable also to the north of it.

So much for "offensive prevention," as the method of jarring the coal by shots is termed. As has been said, Belgium still uses defensive prevention everywhere but in *bouveaux*. The precautions thus characterized now consist solely in a limitation of the driving rate. A daily advance of 4 ft. is exceptional in Belgium. As already stated, the 4-ft. advance should be distributed over not less than six hours of the eight-hour shift. At least three separate cuts are made, each being loaded into cars before the next one is started.

Under such conditions machine cutting as understood in the United States hardly can be considered in Belgian mines of the third category. In the case of the offensive-prevention method described, any kind of cutting by machine or by hand, is contrary to the very principle of the process. The shattering blast unfortunately produces much slack coal mixed with slate so small that it can be eliminated only by washing.

#### PRECAUTIONS IN CASE OF UNPROVOKED BLOWOUT

I must pass on rapidly to the precautions taken to avoid, or at least minimize, the loss of life when a blow-out occurs. To explain these precautions fully would necessitate going into details of a rather complicated sort concerning the many working methods followed in Belgian mines of the third category. As there are numerous variations of these methods made to suit the different conditions in which the seams are found, I must be satisfied with generalities if this paper is to be kept within permissible limits.

The faces always are so arranged in relation to each other and to the main gangway at the base of the workings that the men will find it possible to leave the workings promptly even if the lamps are blown out by the first wind. The escape of the men working along the face in the block of coal directly above the main gangway is comparatively easy even in darkness. Not so, however, with the men working at the other faces, for they must find their way not only down two or more faces but also from face to face through the connecting place called *bourre* by the miners of Belgium.

To make escape easier the faces are as few in number and follow each other as closely as possible. In other words, the engineer in charge tries to keep the general face line as straight as he can. When a man making his way out in darkness arrives opposite the *bourre* at the bottom of a face, he runs into a 2-in. manila rope to which bells are attached. He follows the rope to the next face, and so on. Men going out like this in succession keep the bells jingling, thus giving precious indications to those who may have lost their presence of mind as to the direction in which to proceed.

In workings steep enough to make the use of ladders necessary, there always is next to each ladder a rope by which the men may lower themselves quickly. By merely touching this rope a string of bells is set jingling. Sometimes, where the grades do not justify ladders but yet are steep enough to permit of this arrangement, narrow places are maintained in the gob in which troughs made of sheet steel are laid on the floor of the mine. Down these the men slide directly to the main gangway. This roadway is straight and high enough for big horses, so that once there the men make rapid progress to the *bouveaux*.

There is always the possibility, however, that the men may be delayed in their passage through the main gangway, as also in the workings above, by roof falls or by rocks thrown out of the floor in the manner



described in the previous article. When the *bouveau* is reached, comparative safety is in sight of the men, but even here there still are chances of their being either thrown down and incapacitated for further flight by the second wind or overtaken and smothered by an avalanche of dust traveling toward the hoisting shaft. This happened not only in the historic Agrappe blowout but in many other instances.

What I have designated as comparative safety consists in a string of cells dug in the solid rock ribs of the *bouveaux* at intervals of about 80 ft. These cells, made when the *bouveau* is driven, are entered through a door opening inward. Two storage-battery lamps independent of each other continually light each cell. In a small niche in the opposite side of the roadway two more storage-battery lights and two safety lamps are kept burning at all times. A window in the cell door of wired plate glass 4 in. square enables the men in the cell, even though the door is closed, to obtain a good view of the lights in the niche.

The door is provided also with a small hinged valve opening outward with great facility, but normally kept shut under its own weight. Finally, in a corner of the cell a 3-in. globe valve has been placed, closing the end of a branch of the main compressed-air line by which motive power is supplied to the pneumatic drills at the face of the *bouveau* and other workings, for these are everywhere in use. The main air line is kept under pressure at all times.

The men fleeing down the *bouveau* distribute themselves among the different cells to await developments. If the alarm that made them run out of the workings fails to be followed by a blowout, the men do not stay long in their cells. They are soon found at the shaft clamoring to be hoisted.

#### DO NOT RETURN TILL FACE IS INSPECTED

Under no consideration may they go back to their working places before these have been inspected by the engineer in charge and his assistants. If the expected blowout fails to occur the men stay behind the closed doors of the cells until the fury of the gaseous manifestation has passed, anxiously watching in the meantime the safety lamps in the opposite niche. If these lamps go out, indicating a vitiated atmosphere in the *bouveau*, the 3-in. globe valve is opened admitting air to the cell in any volume necessary to make the atmosphere respirable. All excess of pressure is relieved automatically through the hinged valve in the door.

The electric lights, of course, do not go out. Besides serving to direct the men to the cells they have on countless occasions permitted those who had already reached safety to make quick sallies from the cells to rescue other men who had fallen in the roadway. The men are instructed not to leave their cells should the safety lamps in the niches go out, but to remain there until the atmosphere of the *bouveau* is shown to be safe by parties entering from the shaft. Nevertheless in only a few instances have the survivors of a blowout waited in their cells for the arrival of rescuers. Carrying the wounded and those too weak to walk, they generally start for the shaft as soon as they have reason to believe the air in the *bouveau* again has become respirable.

TESTS ARE BEING CONDUCTED at the experimental mine of the Bureau of Mines, Bruceton, Pa., for the purpose of determining the value of salt in conducting moisture to dry coal dust.

## How to String Trolley Wire Below the Steel Cross Beams in Gangways

BY ALPHONSE F. BROSKY\*

Pittsburgh, Pa.

MANY ways have been devised for carrying trolley wires under the steel collars or cross beams which support a haulageway. The problem is one often presented near or at the main bottom of a shaft mine. The way it was solved in the Criterion mine of the Westmoreland Coal Co., at Rillton, Pa., is illustrated in this article.

In this mine the steel sets extend 800 ft. and have been placed both on the loaded and empty sides of the big bottom. The cross beams consist of 10-in. I-beams placed on 4-ft. centers. They rest upon an 18-in. brick wall which extends along either rib. The roof is lagged with 4- to 6-in. poles which rest on the steel cross beams.

A wooden trolley hanger is inserted between each fifth and sixth beam, and to this is attached a trolley clamp of the timber type. The timber by which the hanger



METHOD OF SUSPENDING HANGER BELOW STEEL BEAMS

This hanger is easily placed and removed, and its height is easily adjusted at such a level that the trolley wheel will not rub on the collars or cross beams and, if dislodged, no arc will be formed through the head of the trolley arm.

is supported is a 4x8-in. plank of yellow pine to which two boards are spiked so as to project the required distance. A block is spiked between the boards so as to bear against the cross timber, this timber being wedged snugly between the beams and made secure to the roof by wedge blocks. All these details are shown in the illustration.

A hanger of this design has the merit of being held without nails, screws or bolts and therefore of being easily placed or removed. Furthermore, it can be assembled on the job, the correct height of the trolley wire being maintained by regulating the length of the boards. The minimum clearance between the trolley wire and the lower flange of the steel beams is kept at 11 in., so that, should the trolley leave the wire, there will be no short-circuiting or flashing, as the wooden pole and not the harp of the trolley wheel or the trolley head will strike the wire. The minimum clearance between the trolley wire and a steel cross beam should be greater than the over-all length of the metallic head of the trolley arm.

\*Assistant Editor, *Coal Age*.

## Annual Meeting of Institute Makes Good Start in Its Inquiries Into Subsidence and Excavating Methods

Does Roof Tumble Till It Clogs or Come Down Shattered but Not Destroyed?—Is Simplicity in Coal Preparation Desirable or Possible?—Can Tests Be Made of Rope by Magnetic Methods?

BY R. DAWSON HALL \*  
New York City

**S**UBSIDENCE, coal washing, stream pollution, the operating methods and costs for labor and materials at the Gary mines, safety in hoisting, fire prevention and fire fighting furnished a good coal-mining program at the one hundred and twenty-seventh meeting of the American Institute of Mining and Metallurgical Engineers, held at the Engineering Societies Building, New York City, Feb. 19-22.

At the morning meeting J. Parke Channing described the subsidence at Miami, Ariz., and was followed by Howard N. Eavenson with an abstract of his paper "Mining an Upper Seam After a Lower One Has Been Extracted." Mr. Eavenson's paper appeared in full in last week's issue of *Coal Age*. In that article he successfully shows that the fears of the conservationists that the mining of a bed of coal would ruin all the seams above it and render them valueless were not justifiable by the facts. Still there were many who had been made aware of those facts many years back. Mr. Eavenson showed that the injury was so slight that he effectually confuted the notions of those who believe that the roof disintegrates into blocks which pile up and eventually fill up the excavated area. George S. Rice is not altogether exempt from this point of view, as his article showed.

### DOMES THEORY LIVES LONG AND DIES HARD

Advocated by such capable experts the belief dies hard indeed. The way the name Fayol passed from mouth to mouth showed how the primitive notions of that early investigator still had their devotees, and no wonder! Actions much resembling what Fayol describes actually happen and any mining man can see them. But the other breakages no one notes, for the line of fracture is unapproachable from below and may be invisible above, but the possibility of mining the beds above proves that what finally happens is not describable in the wording of Mr. Rice or of the long deceased M. Fayol. The roof does not, at least generally, break until it clogs itself.

The public owes a great deal to Mr. Eavenson for his practical paper. Hereafter it may not be necessary to send engineers scouting the country for data on this subject. Mr. Eavenson has settled the question once and for all.

J. J. Rutledge followed with a paper on "Subsidence in Southwest Coal Mines," in which he described the collapse of the mines at Adamson, Okla. He showed clearly that as a result of the catastrophe the ground was broken about 250 ft. ahead of the face of the workings, but as the mine was 750 ft. deep and as it dipped at 15 deg. the slope of the break was not much beyond the normal and rather to be expected therefore

under all the older theories. Mr. Rice remarked that it was the only case of which he knew where a mine worked by rooms showed signs of collapse extending over the solid face, and he ascribed the action to the suddenness with which the breaks occurred. Dr. Rutledge also described the injury done to the Spring Valley schoolhouse which in the center rested on a heading pillar. The ends of the building extended over an area that had been first-mined but with pillars so small that the workings collapsed.

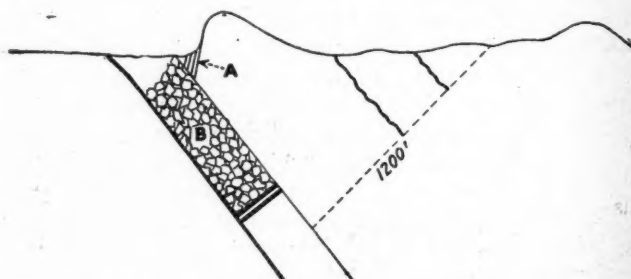
Mr. Rice's paper was accompanied by illustrations. He showed maps in which breaks to the surface coincided closely with excavated areas and did not extend beyond the limits of excavation. However, the contention of the advocates of "draw" is not that caving usually takes place, at least at first, beyond the limits of excavation but that fracturing and some tilting occurs beyond those lines, and this in the case of a plowed field may not exhibit itself on the surface. Moreover, where the opening extends to the top of the ground the failure usually is by vertical shear rather than by bending moment.

### A FRENCH ROOF DISREGARDS LAWS OF M. FAYOL

Eli T. Connor in his discussion said that at Essen, in Germany, where the seams had been filled by hydraulically placed material, the ground had sunk about 8 ft. as a result of the removal of 40 ft. of coal. At St. Etienne, in France, where the coal was on a 25-deg. pitch, the subsidence was 15 per cent of the total thickness of the seams worked.

George S. Rice said that at the Silesian steel works the underground excavations were filled with granulated slag which cements, and the subsidence resulting from mine excavations was only 3 in. Mr. Connor declared that granulated slag is not as strong as sand, as experiments of the Bureau of Mines had conclusively proved.

Thomas H. Claggett said that the damage to the upper seam is greatest at the first break and that the damage is slight if the break is carried steadily forward. J.



ILLUSTRATING EDWIN LUDLOW'S REMARKS

A mine working in a steep seam near Lansford, Pa., caused cracks to appear several hundred feet from the line of outcrop. Several drill holes were made in the hanging wall from the surface as shown at A and shots were fired, dislodging huge rocks which filled the workings at B and prevented any further cracking of the surface.

\*Engineering Editor, *Coal Age*.



J. Rutledge declared that in northern Illinois the cracks at a mine were found to form in a limestone quarry above the mine 8 deg. 15 min. ahead of the working face. The mine was operated by longwall and over a long period of time the advance was only  $\frac{1}{2}$  ft. per day. The depth of the seam was 426 ft. below the point where the cracks were noted and the horizontal draws were 60 and 63 ft.

Edwin Ludlow described a weakening in the roof in a steeply pitching bed near Lansford which opened cracks along the planes of stratification parallel to the bed. This action manifested itself some 1,200 ft. from the bed extracted and tended to do further damage. (See Fig. 1). Large rocks were blasted off the nose, A, in the hope that they would fill the opening, B, and hold back the strata. To date this method has proved successful. Some fears had arisen that the town might be badly injured by the cracking of the strata.

Henry A. Buehler, state geologist of Missouri, Rolla, Mo., stated that in the longwall workings of northern Illinois described by Mr. Rutledge it was noted that the elevations of strata over the still solid coal increased about  $\frac{1}{4}$  in. In the case of a single station this might be regarded as the result of an error in leveling but it was so general that another explanation must be sought.

#### BUMPS MANIFEST THEMSELVES AT LYNCH MINES

General Edward O'Toole remarked that at Lynch, 2,600 ft. of cover has been attained and bumps are beginning to occur. About 8 per cent of the coal is left behind, the pillars crushing under the load. It was noted that a stream was bled by the workings long before they extended to points beneath it. He added that it was found that the pressure was greatest when the pillaring line had advanced a distance from the point of first pillaring equal to about  $1\frac{1}{2}$  times the depth below the surface of the bed being worked. The mining methods meeting just described extended into the afternoon, lasting far longer than the time appointed for it.

In the evening the members met at a smoker, enlivened by a humorous address with lantern slides by Captain Walter E. Traprock on his alleged trip to the North Pole, by the singing of adaptations of popular songs prepared by D. E. A. Charlton and by entertainment furnished by Jack Armour, of the McGraw-Hill Co.

In the morning of the following day the Institute held its official meeting, electing E. P. Mathewson, president; T. T. Brewster, general manager, Mt. Olive and Staunton Coal Co., and F. M. Smith, vice-presidents, and the following directors: W. H. Aldrich, G. H. Clevenger, A. N. Diehl, Reno H. Sales and Seeley W. Mudd.

Secretary F. F. Sharpless reported on the affairs of the Institute. The operating loss on *Mining and Metallurgy* for the year 1922 was \$9,307. The membership committee reported that the total membership, which at the close of 1921 was 10,205, had been augmented by 701 and decreased 1,493, leaving 9,413, of which, however, only 7,186 were members and 19 honorary members and the rest associate members and junior associates. The treasurer's annual report showed receipts of \$177,013 and expenditure of \$174,479.76. The assets totalled \$696,965.05, including an equity in the United Engineering Society of \$486,792.79 and books in the library of \$40,000.

Vipond Davies discussed the affairs of the United Engineering Society by which the Engineers' Societies' Building is held. The land was purchased by the three

Founder Societies each of which paid \$250,000. Still later the American Society of Civil Engineers gave up its building and affiliated with the United Engineering Society, paying into the fund \$250,000. The building was enlarged by two stories so as to accommodate the "Civils." The insured value of the library is \$329,000, but the real value is much greater.

Parke Channing was called on to advocate support to the Federated American Engineering Societies, which he said was doing much to raise the civil status of the mining engineers. Charles F. Rand, the treasurer, said that the surplus after forty-eight years had reached the wholly inadequate figure of \$40,000, which should be reduced by \$17,000 because the proceedings for 1922 had yet to be published. This would leave only \$23,000 for nearly a half century of effort. Other speakers were Arthur Dwight, the retiring president; A. H. Rogers, and P. M. Moore, relative to the discontinued relations with the National Research Council.

At the mining session General O'Toole read his paper on the "Pocahontas Coal Field, and Operating Methods of the United States Coal & Coke Co.," which appears in this issue of *Coal Age*. This is one of the first of the papers being sought by the mining methods committee. It gives the costs of units of labor and material in producing a ton of coal. At the conclusion of the paper S. A. Taylor, who is much interested in stream pollution, endeavored to elicit from the speaker the number of tons of water passing through the mine for every ton of coal mined. This General O'Toole could not state, most of the water not being pumped but led by a tunnel to the surface. Mr. Taylor declared that in western Pennsylvania the weight of water leaving the mine was about  $7\frac{1}{2}$  times as great as the weight of coal.

#### WANT SIMPLICITY AND NO MIDDLE PRODUCT

E. A. Holbrook briefly recounted the points made in the valuable paper of Thomas Fraser and H. F. Yancey, entitled "Interpretation of Results of Coal-Washing Tests." J. R. Campbell, in praising the paper, said that the demand of today was for less elaborate washeries with less sizing and less auxiliary apparatus. Only two products were desired, good coal and refuse. Middle products, the operator found, were not profitable. G. R. Delamater said that he did not believe that one figure for efficiency could be obtained for the whole country but it was valuable to obtain such figures at any one plant as an index of improved or less efficient operation. He had been told that the capacity of by-product ovens had been increased 10 per cent by reducing the moisture content. This figure he said, seems unduly high but if correct it shows how important is a separation that will eliminate water.

Ralph H. Sweetser, assistant to the president of the American Rolling Mill Co., Columbus, Ohio, said that every per cent of ash above 6 per cent added 30c. to the cost of a ton of pig iron. Carl A. Wendell declared that two products were all that were desired. In England it had been found that the best size for washing was 1 in. It was difficult to screen sizes under  $\frac{3}{4}$  in. where the coal was not dry. He believed that much might be said in favor of wet grinding to 200-mesh and amalgamation of the coal thus ground.

In the afternoon, M. W. Ditto delivered his paper on the "Design and Operation of the Roberts Coke Oven." He declared that the ovens, at times, had operated exclusively on the Franklin County coal, from southern Illinois, the product of the oven running only 1.35 per

cent sulphur. The oven was 14 in. wide at the narrow end and 15½ in. at the wider end. He did not believe that the success of the Roberts oven in handling Illinois coal lay in the narrow coking space, for he had coked the coal entirely from one side. The cell structure got coarser as it neared the far wall and the time was longer but the coal coked.

He believed that the secret of success in coking Illinois coal lay in the construction of the oven wall. About 4,200 cu.ft. of gas was obtained in the Roberts oven by coking a ton of coal containing 10 per cent of moisture. The time had been varied from 11 to 48 hrs. and the coal had coked in all cases, showing that the success did not depend entirely on the temperature of the oven.

His company had used the recuperator but he did not believe this to be necessary, and in future regenerators will be used. The Roberts oven uses interruption and impingement as a means of removing the heat from the gases. Hitherto, when seeking to get heats that will coke quickly, it has been customary to drive the gases through the flues at high speed. With interruption and impingement the speed can be cut down, reducing the water gage necessary.

#### COKING TIME HAS BEEN REDUCED TO 10½ HOURS

Mr. Ditto added that the coking time on occasions had been cut to 10½ hrs. Nothing, he believed, would prevent the time being reduced to 9 hours, except that the brick may fuse if the temperature is made too hot in order to lower the coking time. On J. V. Freeman, of Joliet, Ill., asking the names of the mines furnishing coal to the Roberts ovens, Mr. Ditto said that the Old Ben Corporation, the Chicago, Wilmington & Franklin Coal Co. and the company's own Black Briar Mine in Williamson County had been among the sources.

Mr. Ditto said that the coke made in the Roberts oven is somewhat more free burning than that usually produced in byproduct ovens. He thought that the coke was somewhat lighter than the standard product and declared that the zone of combustion is smaller in furnaces using the coke and that accordingly the temperature at the mouth of the furnace is lower. Asked as to the possibility of cooling the Roberts oven without danger, he said that a second cooling seemed practically to wreck the oven. Carl A. Wendell said that he believed that further efficiency might be obtained if flues were run through the coal.

In a further discussion of the Fraser and Yancey paper Eli T. Conner remarked that the Chance separator had done excellent work, but that it had been found difficult to separate the sand from the sizes below ¼ in. It was hoped that better results on these fine sizes could be attained by the use of the Conkling separator, which relies on material of a finer mesh.

George S. Rice remarked that concentrating tables were not proving successful at the mines of the Granby Consolidated Mining, Smelting & Power Co., as the crushing of the coal by earth movement had made the product of the mine shell-like and not granular, resulting in as much as a 40 per cent loss.

Ray W. Arms stated that the air separator would treat coal running anywhere between 2½ in. and 150-mesh. At Raton an air separator is working on coal of 55 to 60-mesh. He did not believe that there was as much objection to fine sizing as some of the speakers had urged, especially with the air separator. Ten tables are often required to obtain the needed output. In

consequence what extra expense other than the cost of screening was incurred in giving every table a separate size? Surely it was well to use several sizes and thereby attain maximum efficiency in preparation.

George S. Rice called attention to the danger of allowing the air of the tippie or "washery" to be filled with fine coal. It is true that an explosion will not occur where the particles are not so close that the burning of one will cause the combustion of another. Where dust collects on the tops of timbers and comes down in a stream, however, danger is imminent, especially where motors are working. If the timber surfaces are beveled or iron surfaces are sloped with cement mortar the danger is greatly reduced.

An article by Andrew B. Crichton, of Johnstown, Pa., was then presented, its subject being "Mine-Drainage Stream Pollution." In discussing it Mr. Taylor said that there was much danger that legislation to prohibit the dumping of oil within the three-mile limit might be passed in such vague terms as to prevent operators from discharging mine water into the streams, thus putting the coal industry almost entirely out of business without the legislators realizing what they were doing.

E. A. Holbrook said that the acid in the streams had a most beneficial effect in that it destroyed the germs in the sewage dumped therein, and it was a pity that no careful inquiry had been made into this factor in "pollution." Looked at from that point it was difficult to determine whether the water from the mines polluted the streams or purified those that were already polluted. Mr. Taylor stated that by reason of the acid water from the mines and other sources it was not necessary to treat the sewage discharged by manufacturing towns.

In the evening some motion pictures illustrating the manufacture of charcoal and charcoal pig, the formation and eruption of volcanoes and matters of zoological interest were exhibited. A dance followed.

#### ROPE SAFETY RECEIVED RENEWED CONSIDERATION

The joint session of the industrial relations committee and the mining section of the National Safety Council met on Wednesday morning with B. F. Tillson in the chair. Rudolph Kudlich read a comprehensive paper entitled "Safe Practices in Mine-Hoisting Equipment." Commenting on this paper Mr. Sunderland said he agreed with the author that "the angle of fleet [the angle between lines drawn from the sheave to the center and the ends of the drum] should be kept within 1½ deg." He would add, however, that where the drum had an ungrooved face the fleet should be less. He recommended watching the interior wires when cutting a rope. The internal was more important than the external wear, as exhibited by breaks in the surface wires.

B. F. Tillson urged that where tracks were good, even 3,000 ft. a minute was not excessive in hoisting men. He did not believe the greater speed with good tracks was any more dangerous than 500 ft. per minute. In case of an accident the probability of fatalities would be equally menacing. Mr. Stone asked if the factor of safety suggested was based on the load or on both load and bending stresses and was told that it was based solely on the former. B. F. Tillson said that unfortunately the factor of safety had to be kept at a lower figure in deep shafts than in shallower ones, for in a deep shaft the rope was so long that it was impossible



to get a high factor of safety, the rope itself being the real burden to be supported.

Turning to fire protection, a paper written by Orr Woodburn, of Globe, Ariz., was read. C. A. Mitke of Bisbee, Ariz., delivered a similar address. He said that at Globe the question arose as to whether a reversible fan should be installed. It was decided that the temptation to reverse a fan sometimes was so strong in case of a mine fire that men would yield to it, with disastrous results, and that it was better therefore to have the fan non-reversible.

Knowing that the fan could not be reversed, the men would know what they should do and would not be uncertain as to the way in which the air would travel. However, the men at Globe, who had been reading about the Argonaut disaster, were of a different mind. They wanted arrangements made so that they themselves could reverse the fan. Orders and notices sometimes avail nothing in preventing reversal where a fan can be reversed.

#### A REVERSAL THAT ALMOST CAUSED FATALITIES

At the Jerome (Ariz.) mines the manager went down to fight a fire and left strict orders that the fan was not to be reversed. The man in charge of the fan obeyed orders despite all persuasion till after about two hours when the manager had not returned. Flame beginning to show up and the manager having failed to leave the shaft at the time he had set for his return the man reversed fan, and the manager barely escaped death from the noxious gases thus driven toward him.

Mr. Mitke said that only after much discussion with Mr. Woodburn did the men consent to give up their notion. The reversal of a fan takes about 15 minutes and the air is not immediately reversed thereby, consequently with every reversal there is a period of uncertain movement, and the results sought may not be attained. Furthermore the fan may be reversed, but the doors, not being secured, will be opened by the reversal. Mr. Mitke urged control of doors electrically. The cost of supplying reversal equipment of fans was not expensive. No one, certainly not the Old Dominion Co., would begrudge the cost, but unfortunately the power to reverse was so likely to be misused that it was better that it should not be provided.

George S. Rice read the new provisions to be required hereafter at California mines and said that at the Cherry mine disaster the evidence all showed that reversal was advisable. Where the air entered by an unconcreted shaft the gases from a fire in that intake might be spread all over the mine by means of the fan. Many extremely deep shafts could be concreted only at a prohibitive cost. To require that they be concreted would involve the closing of the mine. Guniting is not so expensive and would be effectual in preventing a fire if the guniting was unbroken. Where the shaft was in moving ground, however, guniting was not effectual, and many shafts were subject to such movement.

Another speaker said that, after all, reversal might take place as a result of the fire, whether that reversal was desired or not, and, moreover, the slowness with which a fan can be reversed might be corrected by operating the doors by electrical means. B. F. Tillson read a paper on fighting mine fires by hose, declaring that he believed it would be better to use a small hose and small nozzle and use water under high pressure rather than use a larger hose and limit the pressure. He had put a plate with a circular hole in it in the outlet of

his globe valve so as to limit the outflow of water. George W. Booth, of the National Board of Underwriters, agreed with Mr. Tillson, saying that in houses the fire departments were using 1½-in. hose with ¾ in. nozzles with a fixed orifice such as Mr. Tillson was advocating.

Mr. Tillson also commented on the variety of hose connections and Mr. Rice called attention to the fact that at the Cherry mine disaster it was found that the Chicago fire department was helpless because it could not connect its hose to the water lines of the coal company. Mr. Rice said that the recommendations as to the size of hose and the pressure in the line in Technical Paper No. 43 were based on experiments made with the aid of the National Board of Underwriters after the Cherry mine fire. He was not unwilling to admit that further inquiry might reveal that high pressures and small diameters were desirable. All the recommendations for legislation made by the committee formed after the Cherry mine fire had been found practicable and of value except that for automatic fire alarms.

Mr. Booth said that more and more the fire departments of the cities were coming to the 7½ taper thread prescribed by the standard. He added that this standard was made twenty years ago. It seemed likely, he said, that if a new standard were made today it would be of 6 threads to the inch instead of 7½. Those who had coupled on a hose in a volunteer contest would recall how easy it was to get the threads crossed. With the iron pipe thread the difficulty, of course, was much greater.

#### FORMED COMMITTEES AND TALKED OVER PROBLEMS

J. N. Houser, general manager of the Tennessee Copper Co., at Copperhill, Tenn., described that company's methods of selecting committees and talking matters over with its men and inducing them to accept readjustments. Clarence Starr asked several questions as to the reaction of the union to such an arrangement and to readjustment of wages, discovering much difference between the anthracite region, where men are scarce and unions are entrenched, and the copper situation, where in the recent hard times men were in excess and the union weak. Dr. Jau Don Ball's paper on "Industrial Psychiatry" was briefed by T. T. Read. Apparently "psychiatry" is the science of dealing with the subnormal man—the man with the ingrowing grouch and the "inferiority" complex. "Psychology" is the study of the mind of the normal individual, "psychiatry" that of the diseased mind of the subnormal man. The author thought that industrial relations should be in the charge of experienced psychiatrists as the subnormal mind is all too prevalent.

The banquet of the evening of Wednesday was marked by the modest but intensely interesting description by Prince Gelasio Caetani, Italian Ambassador, of his training at Columbia, his experience as a cub engineer in the Far West and Alaska and his exploit during the war in blowing off the top of the Col di Lana, the eye of the Austrians, which towered 10,000 ft. above the sea. The first Douglas medal was presented to Frederick Laist, manager of the Anaconda Copper Mining Co., for his advances in the art of metallurgy.

On Thursday, Feb. 22, a visit was made to the plant of the American Brass Co., at Ansonia, Conn., where the visitors were entertained by the company and conducted in three large parties through the works.



# Problems of Operating Men

Edited by  
James T. Beard



## Standardizing Methods in the Mining of Coal

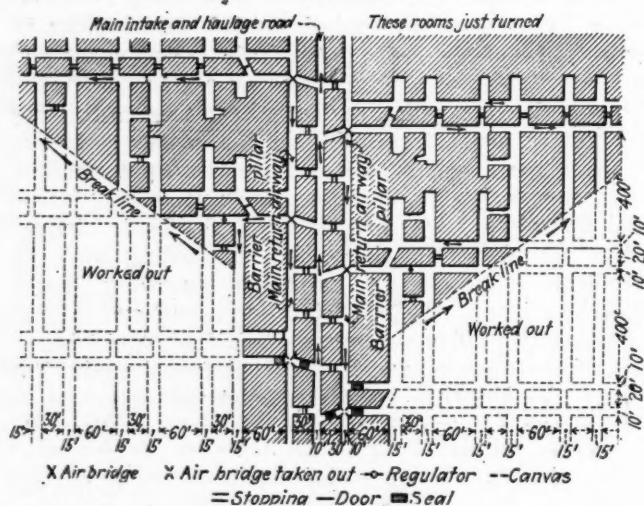
Driving Main Entries Three or Four Abreast—Narrow Stalls Driven in Pairs Off the Butts—Other Precautions to Avert Disaster

EVERY mine should be planned with the constant aim in view of securing the largest percentage of extraction of the coal while insuring the greatest degree of safety to the workers. It is generally recognized that the chief sources of danger, in coal mining, are the fall of rock and coal at the working faces and the presence of gas and dust in the mine air.

These items should be kept in mind continually when considering the method of working best adapted to the conditions in hand. We all know that different methods of working are adapted to different conditions regarding the character of the roof, floor and coal, depth of cover, thickness and inclination of the seam and other items.

Speaking generally, however, and assuming the room-and-pillar method (bord-and-pillar), or the pillar-and-stall method, is to be employed in preference to longwall, there are features that lend themselves to safety, in the planning of the work.

With this explanation, allow me to present the plan shown in the accompanying figure, which appeals to me



PROPOSED STANDARD PLAN FOR ROOM-AND-PILLAR WORK

as the standard of working coal in this and many other districts. No doubt the plan can be modified.

The plan shows the main headings driven three abreast, in which case the center heading is made the main haulage road and intake for the entire mine, and the two flank headings will then serve as the return air-courses for their respective sides of the mine. In my judgment, there should not be less than three main headings as here shown.

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In the working of a large gassy mine, it will often be found an advantage to drive the main headings four abreast. However, I consider that the limit, as a larger number of headings is apt to prove a menace to the safety of the mine, by reason of the headings becoming dry and dusty.

When the main headings are driven four abreast, the two center headings are intake airways, one being used for the haulage road and the other as a manway. This arrangement, I believe, is particularly advantageous in the working of a gassy seam.

### GASSY MINE REQUIRES DUPLICATE EXHAUST FANS TO INSURE UNINTERRUPTED CIRCULATION

As shown in the figure, the mine should be equipped with two exhaust fans of equal dimensions, one fan working on each main return heading. Butt headings are driven in pairs to the right and left of the main headings, on 450-ft. centers, leaving a solid block of coal 400 ft. wide between each pair of butts.

One main feature, in respect to the safety of working, is the driving of narrow rooms or stalls in pairs. In the figure, these are shown as driven at right angles to the butt headings. The stalls are 15 ft. wide and separated by a 30-ft. pillar. As shown in the figure, a solid pillar of coal, 60 ft. in width, is left between each pair of stalls. This plan provides for a one-fourth extraction in the first working, the remaining three-fourths being left to be taken out when retreating.

The driving of narrow stalls, with wide pillars between them, is not only a safeguard against falling roof and coal; but it will, in most cases, reduce the cost of production by requiring less timber and avoiding loss of coal in drawing back the pillars.

### ARRANGING A UNIFORM BREAKLINE

All haulage roads should provide a good clearance on both sides of the track. As shown in the figure, overcasts are built at the mouth of each pair of butt entries. These are taken down and the air-course to that pair of headings sealed when the breakline has reached the face of those headings. At the same time, a canvas is hung, or a regulator installed at the mouth of the entry, to prevent the short-circuiting of the air when the overcast is removed.

As a further precaution in avoiding disaster, a water line, under 80 lb. pressure, should be laid in all entries. Also, during the winter months, steam should be introduced into the intake air, for at least four hours each day when the men are out of the mine.

Too rapid a development of the mine is always a source of danger and should proceed only fast enough to keep ahead of the breakline. At the working face, all coal should be blasted down before the miner is permitted to start loading. If this is done, it will go a long way toward reducing the number of accidents from falls of coal in miners' places.

Parnassus, Pa.

C. W. ATKINS.



## Competent Machine Runners

*Factors that increase cost of machine work—Need of efficient plan—Employing too small a number of machines gives poor results.*

I HAVE read with much interest the timely article by O. Kennett in the issue of *Coal Age*, Jan. 4, p. 18. He has opened a subject worthy of general discussion. I believe there is no one class of mine work that gives more trouble and is the cause of greater expense than the operation of chain machines. All that Mr. Kennett has stated is true and I hope to add some further thoughts to keep the subject alive.

Having operated machines under various conditions I have about reached the conclusion that the high cost of machine repairs, the big bottoms left in every other place and the increasing number of accidents from this kind of work is entirely the fault of the plan of operation and not so much due to an indifferent class of workmen.

### PELL-MELL DRIVE INCREASES COST OF CUTTING

To illustrate this point, let us assume a mine where the coal is cut by the ton and the cutting is done at night, on account of insufficient power to do it on the dayshift. Usually, under these conditions, as few machines as possible are used, in order to conserve the power, and the result is that each cutter has, say twice as many places to cut as he should have. The result is a pell-mell drive, a stop-for-nothing attitude to cut the places assigned by the boss.

The cutter starts "sumping up." He strikes something hard and away goes a few of his bottom bits. He does not take the time to pull out the machine and replace the broken bits, with new ones. Instead, he keeps a going and when he gets to the opposite side of the room he is about a foot off the bottom. The fact that he has left big bottoms in a room means nothing to him and he cares little about his over-worked machine. His only thought is that his wages do not take a slump and he manages to hold the machine together until the shift is over.

While it requires a sturdy machine to stand this grind, it takes a still stronger man to stay with the machine and the fact that he is making good wages makes it a matter of little importance to him when he is blamed for carelessness and indifference. The man, indeed is about exhausted when the shift is over and, as a result, sickness may keep him from work for a day or two. He is even ready to quit if pressed too hard for an explanation of the condition of his machine.

### CUTTING ARRANGEMENTS MUST BE FAVORABLE TO EXECUTION OF THE WORK

It is not profitable to subject machines and men to this kind of treatment. All operators should so arrange their system of cutting that a machine crew will have a fair chance and be able to do their work right and safely. The best way to bring this about is to put cutters on during the day. This may, of course, necessitate buying more machinery, but it will pay in fewer repairs being required and providing more satisfactory working conditions.

No man wants big wages if he must kill himself to get them. Moreover, the knowledge that cutters and scrapers are making such big wages does more to dissatisfy other workers than anything else. The only men who know how much hard bone labor is involved

in cutting eighteen places with a shortwall machine are the men who go in, night after night, and do it under the trying conditions found in the average coal mine.

Finally, in regard to the suggestion that the electrician should employ the machine men, I do not agree with that idea. To my mind, the mine boss should bear that responsibility entirely alone. The electrician is one of the most important men around an electrically equipped mine. He has his hands full when he keeps the machinery going, without being bothered about keeping the machinery manned.

One plan I have seen that brought good results was where the cutter was permitted to select his scraper. Another instance was where the electrician or an assistant examined all machinery once a day, even to the farthest mine pump or rock drill.

Pikeville, Ky.

GEORGE EDWARDS.

## Care Needed in the Operation of Coal-Cutting Machines

*Careless handling of machine invites trouble—Machine must be oiled regularly—Correct use of controller averts burning of contact points—Cutting for speed dangerous.*

THE excellent article on the employment of competent machine runners, which appeared in *Coal Age*, Jan. 4, p. 18, has expressed a new opinion and one that should prove of vast interest to operators of machine mines.

The writer of the article emphasizes the fact that an inexperienced or careless operator can do serious damage to a machine in a short time. He may cause injury to himself or his helper, to say nothing of the loss of time and expense suffered by his employer as the result of his neglect or lack of knowledge.

It is important to remember that carelessness in the operation of a machine, particularly a coal cutter, acts as a magnet to disaster. In the handling of men and machines, for several years past, it has been my chief objective to discover and avoid habitual carelessness in workmen.

### NUMEROUS TYPES OF MACHINE RUNNERS WHO DAMAGE MACHINES IN VARIOUS WAYS

Among machinemen, a dangerous type is the speeder, who cuts coal with the sole thought in mind of increasing his wages. He neglects to oil his machine and, by this and other lack of care, damages the machine, endangers his own life and that of his helper and then produces a lesser tonnage than the man who works with greater moderation and more steadily.

One matter of chief importance in running a coal-cutter is to understand the proper use of lubricant. The machine must be kept well oiled. This is much neglected by the average runner, who fails to realize its importance to the work performed. The failure to use a proper amount of oil, by a machineman, should be promptly investigated by the company as it means a saving of expense and an increase in production.

Great damage will result from continuing to run a machine that has not been properly oiled. In many cases, the result is hot bearings that have to be re-bushed at a great loss of time and expense. On several occasions, I have known the machine boss, on being called to repair a machine, would find the bearings badly scored by reason of being run without oil or other lubricant.

Coal-cutters must operate, necessarily under hard conditions, which require greater carefulness on the part of the runner to avoid damage to the machine. A careless operator will allow the oil openings to become clogged with fine dust and dirt and seldom make any effort to clean them out sufficiently to permit the oil to reach the bearings.

At times, the fiber washer on the bottom of the main gear becomes soaked with oil carelessly poured over the machine. The result is the runner tightens the friction nut to cause the machine to haul. This gives an effective pull on the feed-chain when the oil has worn away, greater than that for which the chain was designed and the latter is broken. Replacing the broken link means a loss of time, but the mended chain is seldom a satisfactory part of the equipment.

#### NEED OF TESTING EACH MACHINE REGULARLY

With every machine there is always sent a device for testing the pull of which it is capable. The machine should be tested at least twice a month, in order to keep the friction properly regulated. Too often this device is thrown aside and forgotten; or it may have been tossed out on the junk heap.

Another type of machine runner is a controller fiend, so to speak. Such would I describe the fellow who has little concern in his use of the controller when starting his machine. He will throw the handle from the first position around to full input, hardly allowing any time for the motor to pick up speed. The result is the burning of contact points, which makes it a dangerous practice.

Assume, for a moment, that this occurs when the machine is cutting up to the rib, the result would possibly break the feed-chain or pull the jack-pipe from the hitch supporting it. The jack falling might harm the machine; or, perhaps, break the cutter chain if the machine was not making a full cut. It would be fortunate if it did not cause the binding of the machine under the cut.

#### WHEN THE MACHINE BINDS IN THE CUT THE RUNNER MUST ACT PROMPTLY

In that event, the friction should be promptly released and the bit clutch disengaged; or the emergency plug at the rear of the machine should be pulled. Never try to operate a machine when the contact points are burned on the starting box. It is better to stand the loss due to the machine being out of commission than to run the chance of accident.

I have mentioned the speeder—the man who is cutting for high wages. This fellow is careless of his own safety when working around a machine. He will take his life in his hand by stepping across the cutter-bar when the machine is running. If the machine should, at that moment, strike a hard substance and kick, or if the man's trousers should catch in the chain bits the poor fellow would be torn to pieces, before the machine could be stopped.

In closing, let me urge more care in selecting men who are habitually careful in running their machines. We should remember that the efforts of a few, in this direction, may prove the safety valve of the multitude.

The efficient machine man is one who cares more for his machine than for the amount of coal he cuts. He will always be on the watch to detect anything that is wrong and will keep his machine well oiled.

Armbrust, Pa.

W. D. RHODES.

## Inquiries Of General Interest

### Best System of Rail Bonding in Mine Haulage

Welding Fishplates to Rails and Cross-bonding by  
Welding Steel Ties to Rails Every 100 Ft., as  
Compared with Flexible Bonds Made for Bonding

IN OUR mine, which is electrically equipped, it has been the custom to weld the fishplates at all rail joints, so as to give a good electrical contact, besides welding the rails to the steel track ties every 100 ft. This was done, perhaps, through preference, or, it may be, to save the cost of buying flexible rail bonds made expressly for the purpose.

It is my desire, now, to learn what *Coal Age* and others think of this method, in respect to its relative efficiency and cost, as compared with other means of securing the same results. It seems to me that the matter of rail bonding, in reference to mine haulage, is worthy of discussion. The question is, Are we getting the greatest possible efficiency, per dollar expended?

We shall watch for the reply to this question and the later accounts of the experiences of others with deepest interest, as I am assured we can all profit by such a discussion.

MINE MANAGER.

La Salle, Ill.

This correspondent has probably voiced the thought and wish of numerous other operators and mine officials who have been blindly following some previous practice or method installed by a predecessor, years before, and has not had the courage or ingenuity to question its relative efficiency and devise ways of improving the situation. In other words, there are too many mine officials who are satisfied to let well enough alone and plod along in another's tracks. They are not progressive.

The question presented is one capable of much profitable discussion, as coming issues of *Coal Age* will undoubtedly show. In the opinion of the editor, there is no system or method of bonding the rails of mine tracks that can compare, in respect to all-round efficiency, with the use of flexible rail bonds that are manufactured for the purpose and now so widely used in mining practice, in every district, both in this country and in Great Britain. The extra first cost of the equipment will soon pay for itself in lesser cost of upkeep.

Different types of these bonds are illustrated and described together with much other information regarding bonding in Catalog No. 18, recently published by the Ohio Brass Co., Mansfield, Ohio. When a good type of flexible bond is properly applied there is little need, generally, for the cross-bonding mentioned by the correspondent and this extra work of welding the rails to the track ties becomes unnecessary.

The question is open for the discussion of its merits by those whose experience in rail bonding will be of value to the industry and we hope there will be a generous response to this appeal.



## Examination Questions Answered

### Miscellaneous Examination Questions

(Answered by Request)

**QUESTION**—The quantity of air passing in a mine is 200,000 cu.ft. per min. The average temperature of the return air is 60 deg. F. all the year round. On a certain day in winter the temperature of the intake air is 20 deg. F.; and on a certain day in summer it was 65 deg. F. Then, assuming that, in each case, a cubic foot of air at the inlet weighs 0.08 lb. when estimated at a temperature of 32 deg. F., what is the difference in horsepower required to produce the given circulation in these two periods?

**ANSWER**—A cubic foot of intake air, at the winter period, is then  $(460 + 32/460 + 20) 0.08 = 0.082$  lb.; and at the summer period,  $(460 + 32/460 + 65) 0.08 = 0.075$  lb. The difference in the weight of the intake air in winter and summer is, therefore,  $0.082 - 0.075 = 0.007$  lb. per cu.ft. But the temperature of the return air being constant throughout the year, the weight of the upcast column is constant and the weight of the downcast column, in winter will exceed that in summer by  $200 \times 0.007 = 1.4$  lb., which is the excess in ventilating pressure due to change of season, expressed in pounds per square foot.

Expressed in horsepower, it is fair to say, the circulation of 200,000 cu.ft. per min., in this mine, will require  $(200,000 \times 1.4) \div 33,000 = 8.48$  hp. less at the winter than at the summer period.

**QUESTION**—Name three essential elements in the efficient ventilation of a mine.

**ANSWER**—(1) A sufficient volume of air must enter the mine to comply with the requirements of the law and to make the mine safe for work. (2) The air must be divided and conducted to and made to sweep the working faces, in each district or section of the mine, so as to keep each place clear of gas. (3) The quality of the air with respect to oxygen content, humidity and freedom from gas and dust, must be such as to make it healthful to breathe and safe.

**QUESTION**—(a) What will be the rubbing surface in an airway 3,000 yd. long, 6 ft. high and 12 ft. wide? (b) How much air will pass in this airway if the velocity is 565 ft. per min.?

**ANSWER**—(a) The perimeter of a 6x12-ft. airway is  $2(6 + 12) = 36$  ft. For a length of 3,000 yd., the rubbing surface is  $3 \times 3,000 \times 36 = 324,000$  sq.ft.

**QUESTION**—Why is it necessary to place a regulator in a given section of a mine?

**ANSWER**—A regulator is required in any section of a mine that takes more than its due proportion of the circulation because of its lesser resistance. The regulator restricts the flow of air in that section by offering additional resistance.

**QUESTION**—How should a hoisting cable be attached to the cage?

**ANSWER**—A steel rope socket such as is commonly used in hoisting practice, or a steel thimble must

first be attached to the end of the rope. To attach the socket the end of the rope is first passed through it from the small end of the bore. The strands are then parted and some of the wires cut out of each strand. The remaining wires are bent back on themselves and the rope now pulled back into the socket. The bore being conical, the enlarged end of the rope formed by bending back the wires holds it fast in the socket. A steel wedge is driven down into the center or lead is used to fill the socket and bind the wires.

When the thimble is used as a rope end attachment the rope is simply wound around the thimble and the end secured by clevises binding it to itself, or the end is spliced into the main body of the rope.

**QUESTION**—Why are spring safety catches to be preferred to those operated by weight and lever?

**ANSWER**—The spring acts independently and is more reliable than the weight and lever, the action of which depends on gravity. When the cage is falling the weight falls with it and, as a consequence, exerts no force to move the lever that controls the catches.

**QUESTION**—What quantity of air is required to ventilate a mine (Ill.) in which are employed 150 miners, 21 daymen, 10 mules being used to haul the coal?

**ANSWER**—The Illinois Mine Law (Sec. 14) requires the circulation of 100 cu.ft. of air, per man, and 500 cu.ft. per mule, where the mine is not gaseous; or 150 cu.ft. per man if gaseous. Assuming the former condition, the air required, in this case, is  $100(150 + 21) + 500 \times 10 = 22,100$  cu.ft. per min.

**QUESTION**—If 60,000 cu.ft. of air per minute is produced under a water gage of 1.6 in. what is the horsepower of the ventilating current?

**ANSWER**—A water gage of 1.6 in. corresponds to a unit pressure of  $5.2 \times 1.6 = 8.32$  lb. per sq.ft. The horsepower on the air is then  $(60,000 \times 8.32) \div 33,000 = 15 +$  hp.

**QUESTION**—An airway has an area of 66 sq.ft. and the reading of the anemometer is 675 ft. per min. What is the quantity of air passing, allowing 4 per cent for the resistance of the instrument?

**ANSWER**—The velocity of the air current, making this allowance for the resistance of the instrument, is  $675(1 - 0.04) = 648$  ft. per min. Then, taking this as an average velocity of the air current, the volume of air passing is  $648 \times 66 = 42,768$  cu.ft. per min.

**QUESTION**—Suppose you were testing for fire damp and an explosion occurred in your lamp, what would you do?

**ANSWER**—If the explosion did not force the flame through the mesh of the gauze it is fortunate. Keep cool and lower the lamp promptly but cautiously, screening it as much as possible from the air while withdrawing from the place. Any quick movement of the lamp would always be dangerous.

**QUESTION**—Should a fall occur on the intake airway and a large amount of marsh gas be given off from the roof, what steps would you take to prevent an explosion and rescue the men at work inside?

**ANSWER**—Notify the men at once to extinguish their lamps and withdraw by the safest possible route. When the men have passed out of the mine station reliable men at the entrance to prevent anyone from returning. The work of conducting the gas by the shortest route out of the mine should then be undertaken by the fire-bosses. Before the men are allowed to again enter the mine, every portion must be carefully examined and the mine reported safe for work.

## Raise Pay of Independent Alabama Miners

Birmingham, Ala., March 1.—Wage increases averaging 12½ to 15 per cent for mine workers in the pits of the Tennessee Coal, Iron & Railroad Co. were announced by the company today. The increase, effective March 15, affects approximately 10,000 coal and ore diggers of the Tennessee company, and brings the new wage close to 50 per cent higher than the level of May, 1922.

The first increase, effective May 15 last, was 10 per cent; the second, effective Sept. 1, 20 per cent.

Independent operators have announced their intention of making substantial increases, effective March 15. The scales now being worked out are expected to follow the lead of the Tennessee company.

The Alabama division of the United Mine Workers is now working out a scale of wages which will be demanded in union mines, it is announced. The Tennessee company operates on an open-shop basis.

## Midwest Roads Offer "Compromise" on Mine Ratings; Operators Object

The railroads of Illinois, Indiana and western Kentucky late last week came back with what they say is a compromise proposal for a new system of rating coal mines for car supply. They propose that they create a joint railroad board of three men to rate all mines in those three general territories on the mines' past performances, using only full-day operation as a basis. If any mine is aggrieved it will be permitted to have its claimed rating until such time as the board gets around to re-examine it, in case that re-examination is not made within ten days. Th's plan meets the hearty disapproval of most Illinois and Indiana operators. Several of them said they would not agree to it but would take the matter back to the Interstate Commerce Commission, which still has the car-rating case under consideration.

What the operators of Illinois and Indiana insisted upon at a conference with the railroads in Chicago two weeks ago was that each mine be rated each month on the per-

formance of the preceding month as under CS 31, now in effect. Western Kentucky was agreeable to the carriers' plan provided it were not applied to that field alone. Many of them believed tippie hours and not underground working time should be the basis. They offered as a "compromise" that the roads create their proposed rating board but that the monthly basis be preserved. This the roads have now declined to accept.

The new proposal of the roads varies little from the original and does not introduce the element of flexibility in rating for which the operators have been contending all along. Car ratings should change from month to month with the change in coal demand and with the consequent fluctuations of production is the opinion of most well-informed coal men.

## 190 Died in January Coal-Mine Accidents; 3.23 per Million Tons Mined

Accidents at coal mines in January, 1923, according to reports from state mine inspectors to the U. S. Bureau of Mines, resulted in 190 deaths. Based upon an estimated production of 58,891,000 tons, the fatality rate was 3.23 per million tons mined, as against 3.65 in January last year, a reduction of more than 11 per cent. The average fatality rate for January over a ten-year period (1913-1922) is 3.96 per million tons; thus the rate for January, 1923, represents a decrease of nearly 19 per cent from the 10-year average rate for the month.

The explosion of gas at Dolomite mine No. 1, at Dolomite, Ala., on Jan. 10, which resulted in the death of five men, was the only major disaster reported for the month. In January last year there also was but one major accident, a dust explosion in a coal mine in Kentucky, in which six lives were lost.

The reports for January, 1923, show slight decreases in the fatality rates per million tons from falls of roof and coal, mine haulage, gas and dust explosions, and powder and other explosions, as compared with the accident record for January, 1922.

COAL-MINE FATALITIES DURING JANUARY, 1923, BY CAUSES AND STATES  
(Compiled by Bureau of Mines and Published by Coal Age)

State	Underground												Shaft				Surface						Total by States				
	Falls of roof (coal, rock, etc.).	Falls of face or pillar coal.	Mine cars and locomotives.	Gas explosions and burning gas.	Coal-dust explosions (including gas and dust combined).	Explosives.	Suffocation from mine gases.	Electricity.	Animals.	Mining machines.	Mine fires (burned, suffocated, etc.).	Other causes.	Total.	Falling down shafts or slopes.	Objects falling down shafts or slopes.	Cage, skip, or bucket.	Other causes.	Total.	Mine cars and mine locomotives.	Electricity.	Machinery.	Boiler explosions or bursting steam pipes.	Railway cars and locomotives.	Other causes.	Total.	1923	1922
Alabama.....	5		1	5		1		1					13													13	10
Alaska.....																										0	0
Arkansas.....																										0	0
Colorado.....	3		2						1				6													6	4
Illinois.....	12		3	1									16			3		3								19	7
Indiana.....	1		1		2								4													3	0
Iowa.....	1												2	1				1								3	4
Kansas.....	2				1			1					3													4	13
Kentucky.....	3	1											4													1	0
Maryland.....	1												1													1	0
Michigan.....																										0	0
Missouri.....	2												3													3	0
Montana.....	2						1						2													2	0
New Mexico.....																										0	0
North Dakota.....																										0	0
Ohio.....	8		3			1				1			13	1				1								14	9
Oklahoma.....																										0	0
Pennsylvania (bituminous).....	17	6	7					2			1		33						1		1		1	3	36	25	
South Dakota.....																										0	0
Tennessee.....	2				1								3													3	0
Texas.....																										0	0
Utah.....						1							1													1	3
Virginia.....	4												4													4	0
Washington.....																										0	0
West Virginia.....	15	1	8			3		2	2				31	1				1					1	1	33	17	
Wyoming.....	1												1													1	1
Total (bituminous).....	79	8	25	6	4	6		7	1	3			140	3		3		6	1	1	1		2	4	150	111	
Pennsylvania (anthracite).....	12	2	6	3		4							30						1	1	3		4	10	40	49	
Total, January, 1923.....	91	10	31	9	4	10		7	1	3			170	3		3		6	2	4	4		3	14	190		
Total, January, 1922.....	65	16	30	6	10	8		4		2			145	1				1	6	1	1		2	5	144	160	



## U. S. Coal Commission Granted \$400,000 Appropriation; Union Not to Have Access to Cost Reports

BY PAUL WOOTON  
Washington Correspondent of Coal Age

While the continuance of the President's Coal Commission was imperiled by the delay in voting its appropriation, Congress in an eleventh-hour effort gave the commission all of the legislation which it had asked. This included the appropriation of \$400,000, the authorization to require sworn answers to questionnaires, the extension of the life of the commission until Dec. 31 and the authorization for Judge Alschuler to serve as a member of the commission.

The appropriation was added to the third deficiency bill in the Senate. It was approved with practically no objection. A separate vote on the amendment was demanded in the House, but the item was approved without a roll call. Prior to that action, however, the House had passed the bill which authorizes the commission to require sworn answers to its questionnaires. The amendments to the original act included the desired increase in the appropriation. The amendments were approved by a vote of 212 to 76.

When the deficiency bill was taken up in the House Representative Blanton, of Texas, opposed the coal commission appropriation and also further investigation into the coal industry.

Representative Goodykoontz, of West Virginia, seconded the effort made by Mr. Blanton to force Chairman Madden of the House Appropriations Committee and in charge of the bill, to give assurances that the commission appropriation would be stricken from the bill. Chairman Madden, however, refused to give such assurances.

Chairman Hammond of the coal commission, when called upon by the chairman of the Committee on Appropriations of the House of Representatives to justify the \$400,000 additional which the commission was asking, said in part: "We can justify this appropriation simply from the recommendations of a practical nature that we can make regarding improvement in mining methods, in the relations between the operators and employees and in many other respects. I am confident that the engineering recommendations alone will justify this appropriation many times over each year. The industry is the worst conducted, from an engineering point of view, that I have ever seen."

The commission had asked originally for authorization to extend its activities to Dec. 31, if that should be found necessary. Since that time the situation which prompted that request has changed sufficiently to make it practically certain that the commission can conclude its work by Sept. 22, the original date set. Congress, however, did not take cognizance of the fact that the commission no longer believes that an extension if its term is necessary and authorized the President to advance the limit as might be found necessary to a date not later than Dec. 31. In commenting on that phase of the legislation, Chairman Hammond stated that he can foresee no contingency that will interfere with the submission of the final report on Sept. 22.

In the same manner Congress took no note of the fact that Judge Alschuler had tendered his resignation to the President and that the President had accepted it. The action of Congress in authorizing him to serve on the commission was entirely unexpected.

The attention of the commission has been called to the plan, encouraging coal storage by the small consumer, which was devised by L. S. Storrs, president of the Connecticut Company, large operators of electric railways. Mr. Hammond and Commissioner Smith are outspoken in their commendation of the plan whereby the company guarantees payment for the orders of domestic fuel placed by their employees on April 1. The plan is to be called to the attention of large employers in the belief that it offers the opportunity to obtain the maximum possible amount of storage on the part of domestic consumers.

While it would be outside the province of the coal commission to request state legislatures to postpone consideration

of pending coal legislation until the commission reports, Mr. Hammond did point out on Saturday that it is obvious that the state as well as the federal government would be in a position to legislate much more intelligently if it had before it the basic facts which the commission is assembling. This statement was called forth by a letter on the subject addressed to the commission by the bituminous operators' special committee.

In connection with the announcement that W. Jett Lauck is to serve the commission on certain special assignments it was pointed out that Mr. Lauck does not have access to the commission's files. Mr. Lauck has been so actively connected with union activities that his appointment is not being met with favor in all quarters. Evidently with the idea of anticipating some of the opposition, Mr. Hammond pointed out that Mr. Lauck is not to be regarded as a member of the regular staff but that he feels advantage should be taken of the service that Mr. Lauck can render in certain matters in which he has had special experience. In connection with that discussion attention was called to the fact that the information contained on questionnaires is scrupulously guarded by the commission. With the exception of the men specially chosen for their reliability, who compile the data from these returns, no member of the commission's staff has access to these questionnaires.

### MINERS' REPRESENTATIVES NOT TO SEE COST FIGURES

In one of the communications submitted to the commission recently by the United Mine Workers it is asserted that the commission has promised to allow the examination of cost figures by miners' representatives. Mr. Hammond is at a loss to know how any such misunderstanding should have come about. That the officials of the United Mine Workers had this misconception first came to the attention of the commission in January. At that time the presidents of the anthracite districts were distinctly informed that the promise is confined to the matter of miners' earnings. The commission expects to allow the unions to check payroll figures as reported by mines in the union fields. Both Mr. Hammond and Dr. Smith subscribe to the following: "This commission as it is organized is as well qualified to analyze and criticize figures and accounting systems as is either party to the controversy between the operators and miners. Indeed we represent both of them, as well as the consumer. When it comes to the examination of the records in this investigation, everyone concerned must put some confidence in the integrity and efficiency of the commission. We know we are impartial and we intend to be thorough."

Chairman Hammond, Governor Marshall and Mr. Howell are spending this week in Alabama. They decline to prepare an itinerary and will look around as it suits their own fancy, with the idea of building up first-hand information and a general background which they believe necessary to the intelligent determination of many questions. Dr. Devine is visiting mines in Oklahoma and Texas.

Regardless of what the unions may think, Mr. Hammond is convinced that coal mines should operate at least sixteen hours a day. He says it is so obviously poor business to obtain but one-shift production from a mine, which represents large capital expenditure, that he feels more general resort to a two-shift system should be undertaken. He said some investigation already has been made as to the possibilities of obtaining substitute employment for the 200,000 or more men which would not be needed in the coal mines if the industry were conducted in the most efficient manner.

It was revealed at Saturday's conference with representatives of the press that the commission is receiving many requests from New England for additional supplies of anthracite. Dr. Smith expressed regret that the commission has been unable to disabuse the mind of the domestic con-

sumer in New England of the impression that the commission has power over distribution. He said it is to be regretted that Federal Fuel Distributor Wadleigh does not have the miraculous power of furnishing the 40 per cent of the anthracite production lost during the strike.

Chicago, March 6.—Judge Samuel Alschuler married Miss Ella Kahn, daughter of a wealthy clothing manufacturer, in Chicago March 5. Judge Alschuler, who is 63 years old, had been a bachelor.

### Sufficient Anthracite Moving to Satisfy Real Needs of Northeast, Says I. C. C.

The Interstate Commerce Commission made a report Feb. 28 to the U. S. Senate in response to Senate Resolution 418, which directed the commission to investigate the advisability of ordering an embargo on anthracite coal to foreign countries.

The substance of the commission's report is that after an exhaustive investigation and through co-operation of federal, state and local fuel administrators and of railroad officials, the movement of anthracite coal is sufficient at this time to take care of the real needs of the consumers in the northeastern portion of the United States, and that preference and priority is being given without materially changing the plans of operations that might arise from the imposition of a priority order upon the carriers, which are at present under great stress in operating their lines. The report further states that no substantial evidence as to purchase or sale of anthracite either unreasonable or unjustly high has been brought to the commission's attention.

### Cushing to Speak Unofficially in Canada

George H. Cushing has accepted an invitation from the Canadian Mining Institute to present certain phases of the commercial situation of coal in Montreal this week. A request for such a presentation was received recently by the Secretary of the Interior from the Canadian Government. In reply Secretary Fall pointed out that his department is not in a position to speak for the commercial interests but suggested that Mr. Cushing had long contact with the marketing phases of coal. This resulted in the invitation being extended to Mr. Cushing by the Canadian Institute. While Mr. Cushing will appear as a private citizen and in no way will be authorized to reflect the views of government officials, because of the official correspondence that has been exchanged he submitted his speech to various officials conversant with coal so as to guard against any utterance that might embarrass them.

### Drop Indictments in Clifton Mine Battle

Indictments charging 126 men with conspiracy to attack and destroy mine property at Cliftonville, W. Va., last summer were "nolled" in Circuit Court at Wellsburg, W. Va., March 5. The defendants had been at liberty under bond for several months. The charges grew out of the Clifton mine battle, in which Sheriff Duvall and six others were killed.

### Lehigh Valley Dissolution Decree Filed

Attorney General Daugherty on March 3 ordered filed in the U. S. Court for the Southern District of New York a final decree for separation of the Lehigh Valley Railroad Co. from its coal subsidiaries. The representatives of the Attorney General were instructed to inform the court that the end desired by the government was the complete separation of the railroad company from the mining and selling of anthracite to such an extent that there should not be any connection, direct or indirect, between any stockholders or officers of the railroad company and of the coal companies.

On the same day Judge Learned Hand in New York heard

a discussion on the separation plan proposed by the railroad company. Edgar H. Boles, general counsel for the railroad company, presented a full draft of the proposed decree. A. T. Seymour, acting U. S. Attorney General, said that while he considered the plan contained features intended to accomplish practical results he said he did not want to be placed in the position of agreeing to it, as the government wanted to bring about a complete separation between the railroad company and the mining and the sale of anthracite.

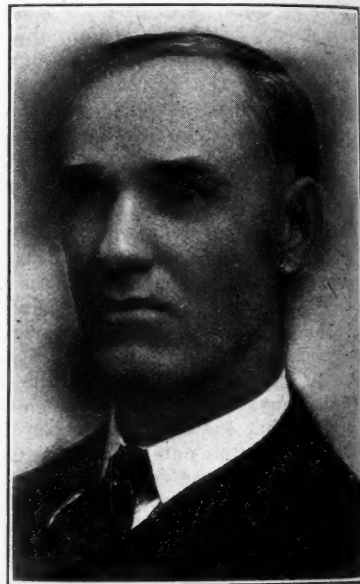
Judge Hand was told objections by stockholders of the railroad company had been presented to the Department of Justice.

### McAuliffe Is Union Pacific's Coal Chief

Eugene McAuliffe, well known in the American coal industry, especially during his presidency of the Union Colliery Co. of Illinois since 1917, is now directing the coal affairs of the Union Pacific Railroad Co. On March 1 he became president of the Union Pacific Coal Co., operating sixteen mines in the Rock Springs (Wyo.) coal field, and president of the Washington Union Coal Co., operating the Tono mine at Tono, Wash. Mr. McAuliffe's offices are at the Union Pacific system headquarters in Omaha, Neb. E. S. Brooks who has been president of the railroad's coal company, continues as field chief in the capacity of general manager of the Rock Springs group of mines and is now a vice-president.

Mr. McAuliffe's step into the control of all Union Pacific coal properties and coal interests is but another stage in a striking career. Not so many years ago he was a "hogger" pulling a throttle on a freight engine. But he had ideas and never was satisfied with just holding a job. That was why he rapidly ascended from shop apprentice on the Northern Pacific in 1888 through various shop and engine-service jobs on various railroads in this country and Mexico until an official of the old Kansas City, Ft. Scott & Memphis, now a part of the Frisco system, pulled him out of the right hand side of an engine cab and made him fuel agent in 1903. In 1908 he became general fuel agent of the Chicago, Rock Island & Pacific, St. Louis & San Francisco, and Chicago & Eastern Illinois railroads and was elected president and general manager of the Brazil Block Coal Co., operating mines in Illinois and Indiana.

He returned in 1913 to the St. Louis & San Francisco as general coal agent in charge of locomotive and shop-fuel purchases, coal-traffic and coal-mine development work. On Feb. 1, 1917, he resigned railroad service to join the staff of the North American Co., owners and operators of electric public utilities, coal-mining properties and river transportation facilities, serving as vice president of the West Kentucky Coal Co., later organizing the Union Colliery Co., where in the capacity of president and general manager he constructed and operated the Kathleen mine, in southern Illinois, assisting in the purchase of fuel for the public utilities in St. Louis, Milwaukee, Detroit and Cleveland. He resigned as president and general manager of the Union Colliery Co. in September, 1922, and has since engaged in special work for the North American Co.



EUGENE MCAULIFFE



## Explosion at Arista Mine in West Virginia Takes Toll of Ten Lives

An explosion at the Arista mine of the Weyanoke Coal & Coke Co. on the Widemouth branch of the Norfolk & Western Ry. in Mercer County, West Virginia, last Friday morning at 10:30 exacted a toll of ten lives and seriously damaged a part of the mine. The bodies of six of the ten miners killed were recovered on the day of the accident. It was impossible to reach the others until the following day owing to the destruction wrought by the explosion.

Other than it seems to have been a dust explosion, the direct cause is uncertain. Some of the officials of the company were inclined to believe that the dust might have become ignited by excessive shooting or because of a blown-out shot. First reports of the cause were to the effect that a runaway trip in striking the side of a passageway in the mine had raised dust which exploded. The force of the blast was such as to hurl timbers, boulders and other debris from the opening on the west side of the mine. The explosion was in the vicinity of the seventh, eighth and ninth entries of the west main, about 3,200 ft. from the entrance to the mine.

Until reorganized on Jan. 1, 1923, the Weyanoke Coal & Coke Co. was the S. J. Patterson Pocahontas Coal Co. It is owned by H. D. Patterson, a relative of the late John H. Patterson, of the National Cash Register Co.

R. L. Lambie, chief of the West Virginia Department of Mines, received word of the explosion within a few hours after it occurred and organized a party of mining inspectors and first-aid experts who left Charleston for Mercer County in the new mine-rescue car of the U. S. Bureau of Mines.

An explosion of three boxes of powder, Feb. 26, at the Superior mine of the Superior Fuel Co., near Curtisville, Pa., injured several persons, destroyed the powder house and two adjoining sheds, tore the roof off the main building, badly damaged the main machinery building and broke many windows in two small towns near by.

## Coal Commission Engineers Gather Data In Central Pennsylvania Field

In conference with the board of directors of the Central Pennsylvania Coal Producers' Association last week in Altoona were M. B. Matson and Charles Young, mining engineers, working as personal representatives of John Hays Hammond, head of the U. S. Coal Commission. Later, engineers will visit the district and confer with the miners and with the officials of the United Mine Workers.

The engineers were studying the economic, labor and engineering phases of the industry and under these general headings are obtaining data on labor costs, production costs, investments, profits, wage rates, absenteeism, labor turnover, strikes and their causes, earnings, efficiency of union and non-union miners, living conditions, marketing, transportation, waste, overdevelopment, etc.

One of the primary objects of the visit of the commission engineers to the central Pennsylvania field was to stimulate operators and miners to take an interest in the investigation and furnish the commission with information that will prove valuable when it comes to reaching a conclusion. The engineers expressed themselves as well pleased with the hearty co-operation of the operators and the association in the central Pennsylvania field.

The Central Pennsylvania Coal Producers' Association, which embraces in its membership practically all the operators in the field, having withdrawn its affiliation with the National Coal Association, is now engaged in preparing the case of the district operators to be presented to the commission.

The association will give the commission the information desired as far as it is possible to do so. Data for form C-1, which covers cost, income and tonnage, and L-1, embracing earnings of miners, are being filled out as fast as the data can be tabulated. These forms are most elaborate and complicated and require much work.

Also a survey will be made by the operators covering investments and profits in the industry in the district from 1906 to 1921, inclusive, and the effects of competition and the decreasing tonnage in central Pennsylvania, which will be set forth in full in a brief that will be sent to the commission.

A discussion of the cause of overdevelopment of the industry in the district will be included and an attempt will be made to draw a proper distinction between development and capacity.

One of the chief features of the report will deal with the industrial situation between the operators and the United Mine Workers of District No. 2. The relations that have existed for twenty-five years and the changes that have taken place will be set forth and the full effects of the policies shown.

## President Harding Makes Position Clear On New England Coal Situation

President Harding made clear his position on the New England coal situation in a letter to Representative Rogers written just before the adjournment of Congress. The letter follows:

"If I am quoted in the New England press as your letter indicated, it is the fault of the newspaper world in quotation, and the blame cannot be attached to me. I did say to the newspaper men, in a recent press conference, that representatives of the Interstate Commerce Commission had reported to me that their agents, who are sent to investigate every reported distressing situation, had said that much of the trouble was 'psychological' and that there was a good deal of hysteria because of the menacing depletion of fuel supplies on hand. I have recognized all along that there is a very anxious situation in New England. I do not see how such a situation could be avoided.

"All the country knows that we had a coal strike last summer of several months' duration and that, in spite of everything that the federal government could do, the strike very greatly diminished our normal supply of anthracite coal. As a matter of fact we are passing the winter on about a 60-per cent supply. In these circumstances I do not see how great inconvenience and much distress could be avoided. Communities accustomed to the use of anthracite coal have rebelled against any substitution of bituminous coal and have hoped from week to week and day to day to obtain an ample supply of anthracite. The ample supply is not available. From the time of the very first complaints coming from New England I have transmitted them to the Interstate Commerce Commission, which is the only governmental authority we have to deal with the situation. To be sure, the Federal Fuel Distributor is authorized by Congress to make recommendations, and these recommendations have been made with great earnestness.

"There is no one with power to tell the commission what to do. Priority orders have been recommended, but the commission is clearly reluctant to resort to that remedy. Members of the commission report to me that every reported distressing situation is being promptly investigated by personal representatives of the commission, and that necessary steps are very promptly taken to afford relief. I should be glad, of course, to see every apprehension removed. If someone will tell me wherein I have the authority to do so I will be glad to adopt vigorous measures. I do not think it is either prudent or desirable to attempt an embargo.

"It does not help the situation, but I venture to express the hope that the Congress will make provision to carry on the work of the Fact-Finding Coal Commission so that the very unfortunate state of affairs so often reported this winter will never be possible again in the United States."

**MEETING ON LAKE TRAFFIC.**—A meeting of the Lake Committee of the West Virginia Coal Association was held at the Washington Hotel, Washington, D. C., March 2 for the purpose of considering Lake traffic for the coming season. No action was taken at this meeting but it was arranged to hold a further meeting subject to the call of Mr. Hartwell of the Northwest Dock Operators' Association.

## Prof. H. H. Stoek Falls Dead

Harry Harkness Stoek, professor of mining engineering in the University of Illinois, Urbana, Ill., and a former leader in coal mining circles in Pennsylvania, fell dead March 1 in an automobile painting shop in Champaign, Ill.

Professor Stoek had been professor of mining engineering and head of that department in the University of Illinois since 1905 and previous to that date had occupied a prominent place in Pennsylvania coal-mining circles. After being graduated from Lehigh University in 1887 and taking the degree of mining engineer there in 1888, he was for about two years assistant engineer of the Susquehanna Coal Co. at Wilkes-Barre. Then he returned to Lehigh, where for

three years he was an instructor in mining, metallurgy and geology.

From 1893 to 1897 he was assistant professor of mining engineering at Pennsylvania State College and from 1897 to 1909 was editor of *Mines and Minerals*, published in Scranton. In the latter field especially he occupied a prominent place not only in the coal-mining industry of Pennsylvania but throughout the United States. Professor Stoek had served as secretary of the Illinois Mine Rescue Commission, was a member of the Illinois Mining Investigation Commission



PROF. H. H. STOEK

and was a prominent leader in mine-rescue work. He was a member of the American Institute of Mining Engineers, an ex-president of the Coal Mining Institute of America, and was a member of the Institute of Mining Engineers of Great Britain, the Lake Superior Mining Engineers, the Illinois Mining Institute, the West Virginia Mining Institute and the Western Society of Engineers.

He published several volumes on coal mining, among these being "The Anthracite Coal Field," "The Economic History of Anthracite," "Subsidence in Mining," "The Education of Mine Employees" and "The Storage of Coal." He was particularly interested recently in the problems of the storing of coal and had just been appointed by the American Engineering Council to serve on a committee of engineers to make a detailed study of storage for commercial and industrial purposes. Professor Stoek was a widower at the time of his death. His wife was Miss Miriam Ricketts, of Wilkes-Barre, Pa., to whom he was married Dec. 20, 1894. He is survived by one daughter, Miss Leigh Stoek, Urbana, Ill. He was just past fifty-seven years of age and was born in Washington, D. C., Jan. 16, 1866.

## Blames Hugh Willis for Herrin Murders

The second Herrin massacre trial is well on its way. Last week attorneys both for the defence and prosecution made their opening statements and examination of witnesses began. Five men, including Hugh Willis, state board member for the United Mine Workers, are on trial charged with the murder of one of the armed guards at the Lester strip mine near Herrin, Ill., last June when a mob accepted the surrender of 48 non-union men and slaughtered 22 of them.

C. W. Middlekauf, attorney for the state, in his opening speech blamed Hugh Willis for inciting the mob to murder the captives. Angus Kerr, head of the union's defence, de-

clared "the prayer of the meek and lowly is that this jury shall decide the day has gone by when great corporations in their greed for profits can use gunmen in an effort to set up an industrial autocracy." Kerr, in a statement following the acquittal of the union defendants in the first trial, declared that acquittal to be just such a decision as he now seeks.

Kerr, who moved to Williamson County last autumn at the beginning of the Herrin trial, has just been appointed City Judge of Benton. The appointment is traced by political observers back through the hands of a Williamson County political boss who has been loyal to Governor Small.

## Charges Bad Faith in Union Statements To U. S. Coal Commission

Walter Gordon Merritt, counsel for the General Policies Committee of anthracite operators, filed March 1 with the U. S. Coal Commission a protest against recent communications from the United Mine Workers of America, asserting that these statements are prepared not for the information of the commission "but for the purpose of disseminating sham and misleading arguments and conclusions through the medium of the newspapers."

Mr. Merritt's communication to the commission is as follows:

"Two statements from the United Mine Workers of America to the commission with reference to wages, prices, profits and production costs in the anthracite industry have come to my attention through the newspapers. We regret that these statements are not calculated to promote a fair understanding and a square deal between the parties involved or between them and the public. The circumstances show that they are prepared not for the use or information of the commission but for the purpose of disseminating sham and misleading arguments and conclusions through the medium of the newspapers.

"As you are aware, the producers of anthracite, in co-operation with the commission, are now preparing accurate data with respect to wages, cost of production, prices, profits, etc. This data will be the most complete and comprehensive ever collected on the subject and will include details as well as conclusions. The Policies Committee of the anthracite industry is pledged to a full disclosure of these facts and, so far as we know, none are being withheld. In due course this information will be compiled, examined and weighed by the commission and, we hope, made public. Statements on these matters before the data are available are obviously so unworthy of serious consideration that they cannot be inspired by a spirit of helpfulness.

"The real motive behind this propaganda is shown by the constant assertion in these statements that the operators are paying inadequate wages to maintain inordinate profits. The conclusive answer to this claim is the repeated willingness of the operators to arbitrate and the open insistence of the miners' union that there shall be no more arbitration. If the facts were as represented in this propaganda, the miners would willingly rely upon reason rather than force to sustain their claims and instead of inflicting privations on our people through anthracite strikes and coal shortages, would entrust their case to the peaceful adjustment of a fair and disinterested agency. The most anti-social practice in the anthracite industry today is the willingness to paralyze the industry and injure the public by general strikes and intermittent outlaw strikes, when machinery for conciliation and arbitration exists. If the miners must issue statements, they should tell the public what they propose to do about this abuse instead of discussing costs and profits, concerning which they do not possess the facts.

"For these reasons we respectfully but earnestly protest against the irresponsible procedure now being followed by the miners' organization, while at the same time expressing our confidence that the commission will place no dependence upon this reckless propaganda. If the time has come when all statements of parties before the commission must be sent piecemeal to the press, the commission can at least rest assured that the operators' statement will be based on a careful conformity to investigated facts."



## Secretary Davis Says Coal Radio Release While Commission Sat Was Coincidence

James J. Davis, Secretary of Labor, has written a reply to the remarks of Alfred M. Ogle, president of the National Coal Association, printed in *Coal Age*, Feb. 8, wherein Mr. Ogle characterized a radio release by the department as "a most unjustifiable and indefensible attack on the entire coal industry." Secretary Davis' letter, dated March 3, is as follows:

"Referring to your recent observations on the problems of the Coal Industry as copied in the *Coal Review* from *Coal Age*, I note that you very properly call attention to the general tendency of the press and public to misinterpret the preliminary report of the Coal Commission for want of more careful study and necessary knowledge to a correct interpretation.

"Later in the same interview you call attention to a recent radio release of the Department of Labor, and as your interpretation of same indicates a lack of familiarity with the functions and activities of this branch of the federal government, permit me to briefly outline same.

"The following constitute the activities of the Department of Labor: Bureau of Labor Statistics, Bureau of Naturalization, Bureau of Immigration, Children's Bureau, Women's Bureau, Housing Bureau, Division of Conciliation, Employment Service. Each of these bureaus and divisions are continuous in their activities and investigations, and are required by law to give the public the benefit of their findings as soon as possible.

"The survey release made by the Children's Bureau about which you complain as 'a most unjustifiable and indefensible attack on the entire coal industry, in addition that the said release can be regarded only as a serious courtesy to the President's Coal Commission,' was begun in 1921 and continued during the year 1922, before, during and after the great coal strike, and therefore began long before there was any coal commission considered.

"The broadcasting of a summary of the findings of the Children's Bureau was according to the regular schedule of publicity, and it was a mere coincidence that it was concurrent with the sittings of the Coal Commission.

"The purpose of all investigations of this department is to ascertain the truth about conditions affecting the welfare of all labor. That this survey began a year or more before the Coal Commission convened, and that it happened to be in relation to child welfare in the coal-mining camps, was another coincidence without the least intention or knowledge that a concurrent general investigation of the problems of the coal industry would be functioning before the survey was finished.

"I said that we want only the truth, and if we can be shown that said survey is in any way a perversion of the truth, let me assure you that a prompt correction will be forthcoming, and if it can be shown that any or all the investigators lent themselves to prejudice the truth about any condition found, the correction will be accompanied with such discipline that will prevent any immediate repetition in the further making of similar surveys.

"Therefore, Mr. Ogle, you will contribute something in the way of real constructive criticism if you will be good enough to furnish me with detailed proof of any errors made in this survey, with the assurance that they will be promptly checked by this department. I would prefer to have the checking done jointly by representatives of your National Coal Association and this department.

"It may further interest you to know that a complete copy of said survey has been filed with the Coal Commission.

"May I also suggest that the survey was believed to be the truth and if it (the survey) proves to be the truth, the publication or broadcasting of same as required by law could hardly be construed as an attack on the coal industry or an act of discourtesy to the Coal Commission, but rather as an aid to the further education of the public showing some of the contributing causes of unrest in some mining districts, that show the necessity for the thorough study now being conducted by the President's Coal Commission.

"May I also say that the Coal Commission is a temporary but concentrated effort to develop the facts of the industry

to meet an emergency, while the Department of Labor, through its various activities, is a permanent institution to gather, tabulate and correlate these facts from time to time for the public information, which of course includes Congress, commissions, federal departments, employers and labor generally.

"The Department of Labor is not a perfect institution, and there is room for much improvement, therefore constructive criticism is always welcomed, as the only desire we have is to turn the light on various industries in a helpful way, so that the causes of discontent may gradually be removed and the friendly relationship of employer and employee be insured by such removal."

## Says Miners Would Take 20 per Cent Cut in Wages if Assigned Cars Were Abolished

Arguments in the assigned-car case were concluded on Friday, March 2, before the Interstate Commerce Commission. Attorney Ballard, for the National Coal Association; Attorney Ropriquet, representing Illinois operators; Attorney Boyle, the Southern Ohio Coal Exchange, and Attorney Liveright, of the central Pennsylvania operators, all argued against the assigned car. Attorney J. J. Kintner, of Lock Haven, Pa., appeared on behalf of District No. 2 of the United Mine Workers of America in opposition to the assigned car in all of its phases. Mr. Kintner stated that if it were not for the assigned car there would be a big reduction in the production cost of coal and also a big reduction in miners' wages. When asked by Commissioner Potter how much reduction in wages would result, in his opinion, from the abolition of the assigned car, he stated that he believed that the miners could take a 20 per cent reduction if the assigned-car practice were discontinued.

Mr. Kintner said that the railroads in the district for which he was speaking have used the assigned and private car to discriminate against union labor. He made public a letter dated Feb. 10 to Dr. Edward T. Devine, of the U. S. Coal Commission, from John Brophy, president, District No. 2, United Mine Workers of America, in which the assigned-car evil is brought to the attention of the coal commission with a request that the practice be abolished.

Attorneys Gutheim and Bronson appeared on behalf of the railroads and James Carmalt on behalf of the owners of private coal cars. Messrs. Gutheim and Bronson's argument was to the effect that the railroads could not get their coal in an orderly manner without the use of assigned cars. Attorney Carmalt took the position that privately-owned coals cars augment the general supply and he did not claim for them any preferential or special service.

## Senate Gets Report on Anthracite Impurities; Walsh Presents Coal Inspection Bill

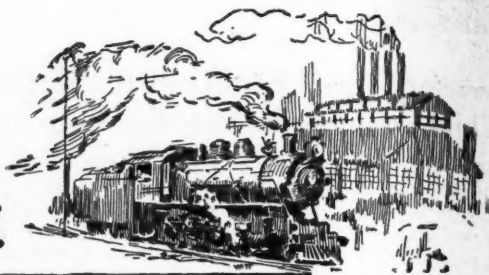
The U. S. Bureau of Mines transmitted to the Senate March 2 a report in response to a resolution adopted by that body calling for information relative to the extent of misbranding and impurities found upon investigation to be contained in anthracite being marketed. The bureau states that although its studies show that much high-ash coal is shipped and that many letters have been received from the anthracite-using districts complaining of the quality of coal, it "has made no special investigation that would enable it to say what proportion of such coal carries an unreasonable amount of ash."

The report adds that there are no generally accepted standards for comparison; that the determination and maintenance of grades for coal depends upon extensive sampling and analysis, and a suitable inspection system and competent force. The bureau expresses the opinion that the recommendation by the Secretary of the Interior in 1919 proposing the establishment of a coal-inspection system "would best meet with the needs of the case."

Senator Walsh, author of the resolution, introduced a bill in the Senate March 2 along the lines suggested by the Bureau as above stated. The measure was referred to the Committee on Mines of the Senate.



# Production and the Market



## Weekly Review

After the slump in the holiday week production of bituminous coal recovered last week and reached the 11,000,000-ton mark. Prices, however, continue their downward trend, *Coal Age* Index dropping nine points in the week to 279 on March 5, with the average spot price at \$3.38. Consumption of soft coal has been at a high level for the past three months, the immediate result of the business revival and the domestic demand. The output of bituminous coal has been held in check by car shortage in the East and lack of demand west of the Mississippi.

That prices on the whole have been slumping for the past two months does not tell the whole story, for in the process of readjustment the market on high-grade low-volatiles in the East has been more resistant than on the lower grade steam coals or on the high-volatiles in the Midwest. When all the accounts have been checked up for this winter it will be found that on the whole production has been in excess of consumption and that there has been a continuous if somewhat diminishing stream of soft coal going to storage, which fact accounts for the steady softening of the market.

It is quite evident that no satisfactory basis for contracting for the next coal year will be reached until well after April 1. Buyers are waiting to see how the railroads carry the load that general business is putting on them and how competition between the various fields cuts prices when the cold weather demand is out of the way.

### DEMAND FROM FOREIGN COUNTRIES

The demand from foreign countries for American coal grew in strength early in the week, only to fall again following a sharp advance in steamer rates. For a few days quotations for Southern coals were slightly stronger, but they soon relaxed. Late last week it was reported that from six to twelve steamers had been

chartered to carry coal from Hampton Roads or other Southern ports across the seas, most of the chartering being done in London.

There is plenty of coal throughout the Midwest. In Milwaukee the demand for anthracite or its substitutes remains strong. Dock supplies in that city are short. Increased industrial activity in the mountain states is absorbing a 60 per cent production at most of the Colorado and Utah mines.

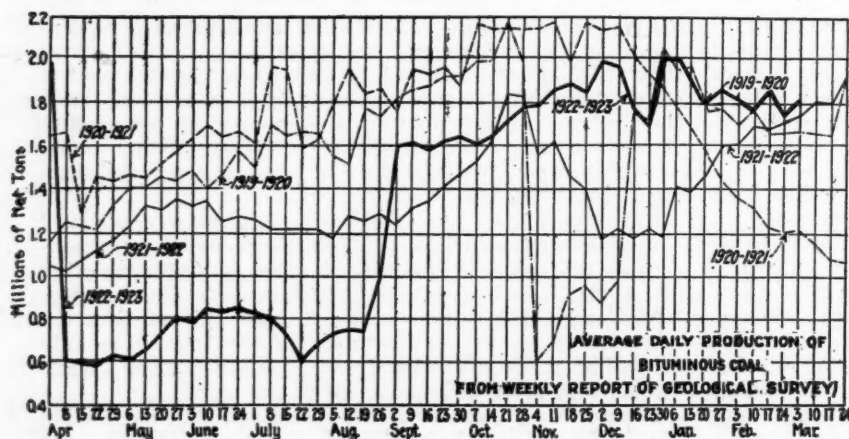
Operations in central Pennsylvania are suffering from poor car supply, embargoes on shipments into New England and dull market. Most operators are anxious for contract business. The majority of contracts closed have been renewals. Buyers continue to hold off, believing they will do as well in the open market as by signing up at the current quotations.

### NEW ENGLAND SITUATION QUIET

Market conditions in New England are quiet. Consumers, especially large users, are marking time. Both all-rail and by water there is ample coal offering, and there is every indication the supply will exceed the demand during this month and April.

"Present estimates of soft-coal production in the week ended Feb. 24 indicate a total output of 10,332,000 net tons, including coal shipped, mine fuel, local sales and coal coked," says the weekly report of the Geological Survey. "This is 100,000 tons less than the revised estimate for the week preceding, but the daily rate of output, considering the observance of the holiday in some districts, was essentially unchanged.

"That the downward trend in production is checked is further indicated by preliminary reports of cars loaded during last week (Feb. 26-March 3). These show 42,732 cars loaded on Monday, 32,984 on Tuesday, 31,150 on Wednesday, and 28,398 on Thursday, the total for the four days being 7 per cent greater than for the



### Estimates of Production

(Net Tons)

#### BITUMINOUS

	1922	1923
Feb. 10.....	10,309,000	10,725,000
Feb. 17 (b).....	10,285,000	10,431,000
Feb. 24 (a).....	10,402,000	10,332,000
Daily average.....	1,734,000	1,736,000
Coal year to date.....	380,351,000	366,878,000
Daily average coal year.....	1,373,000	1,322,000

#### ANTHRACITE

Feb. 10.....	1,822,000	2,023,000
Feb. 17.....	1,703,000	1,828,000
Feb. 24.....	1,701,000	1,838,000
Coal year to date.....	79,823,000	46,213,000

#### COKE

Feb. 17 (b).....	135,000	378,000
Feb. 24 (a).....	157,000	370,000
Calendar year.....	997,000	2,758,000

a) Subject to revision. (b) Revised from last report..



corresponding part of last week. The indicated total output for the week therefore is about 11,000,000 tons."

Moderating weather conditions have affected the anthracite situation. While there is a continued demand for the domestic sizes it is believed the crisis has been passed. Repeating their requests of a few weeks ago and later asking that the orders be reinstated dealers from many faraway points have cancelled orders for the domestic coals.

Coke production decreased during the week ended Feb. 24 for the first time in many weeks. The total output estimated by the Geological Survey from reports of cars loaded by the principal coke carriers and in part on reports of producers was 370,000 net tons, as compared with 378,000 net tons in the week preceding.

### Midwestern Market Quiet

Nothing happened during the past week to liven up the Central Western market to be viewed from Chicago. Soft weather kept domestic demand quiet. This, however, was not sufficient to decrease the general supply enough to hoist the price of steam sizes. Nobody demanded coal of any sort.

Big steam buyers laid back on their contracts so that little spot coal was traded to the advantage of the operator. A good deal, on the other hand, got into difficulty and had to be dumped at weak prices.

Franklin County operators, best fortified with contracts, were able to maintain circular prices pretty well on big lump while weaker grades of coal from surrounding properties were undercutting them 50¢@75¢.

Central Illinois, with all too good car supply, could not maintain its \$3.50 price on 6-in. lump. Some of the country trade took a thin stream at that price but more of it sold for \$3.25. Screenings from that field went down to \$1.25 along with the fine sizes from the Standard district east of St. Louis, where cars were just as numerous. Several central Illinois mines have already shut down, along with about 25 per cent of Indiana mines, for lack of market.

Illinois and Indiana coals continue to have all the business there is in the Midwest because of the continued transportation jams at the Cincinnati and Toledo gateways.

Dropping off of railroad tonnage in all Illinois fields helped in the general soggy. Car supply ran little better than two days a week in any of the southern or southwestern Illinois fields. Cheaper coals sold through the St. Louis market with less pushing than superior grades, just

## Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

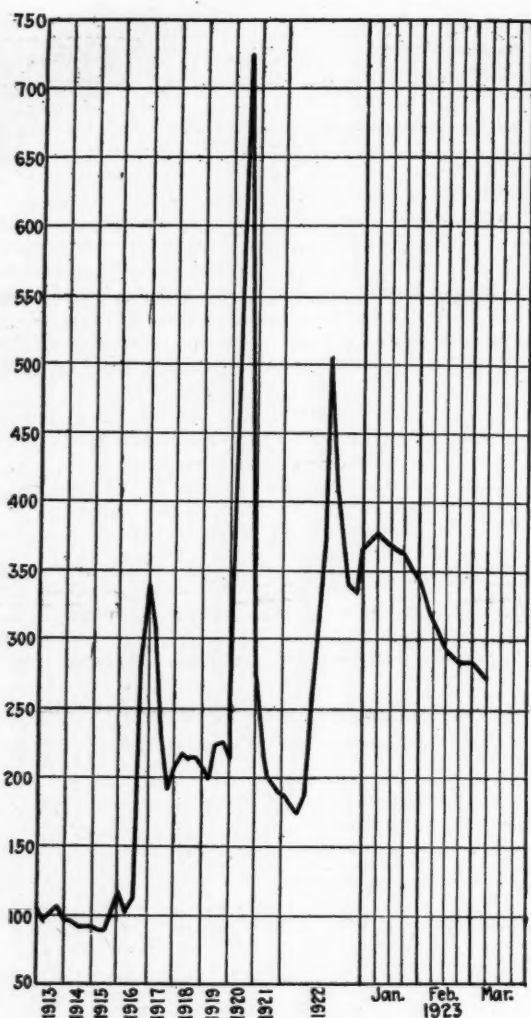
Low-Volatile, Eastern		Market	Mar. 6	Feb. 19	Feb. 26	Mar. 5
		Quoted	1922	1923	1923	1923†
Smokeless lump.....	Columbus....	\$3.20	\$7.00	\$7.00	\$6.50@	\$7.50
Smokeless mine run.....	Columbus....	1.85	4.35	4.50	4.25@	4.75
Smokeless screenings.....	Columbus....	1.35	4.35	4.45	4.25@	4.65
Smokeless lump.....	Chicago....	3.15	7.00	7.00	6.75@	7.25
Smokeless mine run.....	Chicago....	2.00	4.75	4.50	4.00@	5.00
Smokeless lump.....	Cincinnati....	3.15	7.25	7.50	7.00	
Smokeless mine run.....	Cincinnati....	1.75	4.75	4.75	4.50@	5.00
Smokeless screenings.....	Cincinnati....	1.15	5.00	4.10	4.50@	5.00
*Smokeless mine run.....	Boston....	4.65	6.70	6.20	6.00@	6.35
Clearfield mine run.....	Boston....	1.95	3.85	3.75	3.25@	3.75
Cambria mine run.....	Boston....	2.45	4.50	4.35	3.75@	4.50
Somerset mine run.....	Boston....	1.90	4.10	4.00	3.50@	4.00
Pool 1 (Navy Standard).....	New York....	3.00	4.80	4.75	4.50@	5.00
Pool 1 (Navy Standard).....	Philadelphia....	3.05	4.80	4.70	4.45@	4.85
Pool 1 (Navy Standard).....	Baltimore....	2.70				
Pool 9 (Super. Low Vol.).....	New York....	2.50	4.00	3.85	3.50@	4.25
Pool 9 (Super. Low Vol.).....	Philadelphia....	2.45	4.35	4.25	3.60@	4.00
Pool 9 (Super. Low Vol.).....	Baltimore....	2.30	3.60	3.50	3.75@	4.25
Pool 10 (H.Gr. Low Vol.).....	New York....	2.10	3.70	3.50	3.00@	3.75
Pool 10 (H.Gr. Low Vol.).....	Philadelphia....	2.10	3.70	3.60	3.40@	3.60
Pool 10 (H.Gr. Low Vol.).....	Baltimore....	2.15	3.25	3.25	3.00	
Pool 11 (Low Vol.).....	New York....	1.75	2.90	2.90	1.90@	3.00
Pool 11 (Low Vol.).....	Philadelphia....	1.75	3.15	3.05	2.75@	3.10
Pool 11 (Low Vol.).....	Baltimore....	1.95	2.65	2.60	2.25	
High-Volatile, Eastern						
Pool 54-64 (Gas and St.).....	New York....	1.60	2.60	2.25	2.00@	2.60
Pool 54-64 (Gas and St.).....	Philadelphia....	1.50	2.75	2.45		
Pool 54-64 (Gas and St.).....	Baltimore....	1.55	2.45	2.65	2.25	
Pittsburgh se'd gas.....	Pittsburgh....	2.70	4.10	4.10	4.00@	4.25
Pittsburgh mine run (St.).....	Pittsburgh....	2.15	2.75	2.75	2.75	
Pittsburgh slack (Gas).....	Pittsburgh....	1.65	2.85	2.80	2.75@	3.00
Kanawha lump.....	Columbus....	2.50	4.30	4.50	4.00@	5.00
Kanawha mine run.....	Columbus....	1.60	2.60	2.85	2.75@	3.00
Kanawha screenings.....	Columbus....	1.30	2.35	2.45	2.35@	2.65
W. Va. lump.....	Cincinnati....	2.25	4.25	4.75	3.75@	4.85
W. Va. Gas mine run.....	Cincinnati....	2.00	3.35	2.75	2.50@	3.00
W. Va. Steam mine run.....	Cincinnati....	1.35	3.35	2.50	2.50@	3.00
W. Va. screenings.....	Cincinnati....	1.30	2.35	2.35	2.25@	2.50
Hooking lump.....	Columbus....	2.65	4.25	4.30	3.85@	4.50
Hooking mine run.....	Columbus....	1.90	2.50	2.60	2.50@	2.75
Hooking screenings.....	Columbus....	1.45	2.10	2.10	2.00@	2.35
Pitts. No. 8 lump.....	Cleveland....	3.10	4.25	4.35	3.65@	4.60
Midwest						
Franklin, Ill. lump.....	Chicago....	3.25	4.60	4.60	4.50@	4.75
Franklin, Ill. mine run.....	Chicago....	2.50	3.35	3.35	3.25@	3.50
Franklin, Ill. screenings.....	Chicago....	2.00	2.55	2.35	2.25@	2.50
Central, Ill. lump.....	Chicago....	3.00	3.35	3.35	3.25@	3.50
Central, Ill. mine run.....	Chicago....	2.35	2.60	2.60	2.50@	2.75
Central, Ill. screenings.....	Chicago....	1.75	1.60	1.60	1.25@	1.35
Ind. 4th Vein lump.....	Chicago....	3.25	4.35	4.35	4.25@	4.50
Ind. 4th Vein mine run.....	Chicago....	2.50	3.10	3.10	3.00@	3.25
Ind. 4th Vein screenings.....	Chicago....	2.15	2.10	2.10	2.00@	2.25
Ind. 5th Vein lump.....	Chicago....	2.80	3.60	3.60	3.50@	3.75
Ind. 5th Vein mine run.....	Chicago....	2.35	2.60	2.60	2.50@	2.75
Ind. 5th Vein screenings.....	Chicago....	1.65	1.80	1.80	1.75@	1.85
Standard lump.....	St. Louis....	2.60	3.10	3.10	3.00@	3.25
Standard mine run.....	St. Louis....	1.95	2.25	2.25	2.25	
Standard screenings.....	St. Louis....	1.10	1.45	1.45	1.30@	1.40
West Ky. lump.....	Louisville....	2.45	3.35	3.35	3.25@	3.50
West Ky. mine run.....	Louisville....	1.85	2.05	2.20	1.90@	2.25
West Ky. screenings.....	Louisville....	1.80	1.85	1.85	1.70@	2.00
West Ky. lump.....	Chicago....		3.60	3.60	3.50@	3.75
West Ky. mine run.....	Chicago....		1.95	1.95	1.75@	1.85
South and Southwest						
Big Seam lump.....	Birmingham..	2.60				
Big Seam mine run.....	Birmingham..	1.85	2.10	2.10	2.00@	2.25
Big Seam (washed).....	Birmingham..	1.85	2.60	2.60	2.50@	2.75
S. E. Ky. lump.....	Chicago....		4.60	4.60	4.50@	4.75
S. E. Ky. mine run.....	Chicago....		2.85	2.85	2.75@	3.00
S. E. Ky. lump.....	Louisville....	2.45	4.75	5.00	4.50@	5.50
S. E. Ky. mine run.....	Louisville....	1.55	2.60	2.60	2.25@	3.00
S. E. Ky. screenings.....	Louisville....	1.30	2.35	2.20	2.00@	2.40
S. E. Ky. lump.....	Cincinnati....	2.25	4.00	4.75	3.60@	4.00
S. E. Ky. mine run.....	Cincinnati....	1.40	2.60	2.35	2.25@	2.75
S. E. y. screenings.....	Cincinnati....	1.20	3.35	2.10	2.00@	2.35
Kansas lump.....	Kansas City..	5.00	5.00	5.00	5.00	
Kansas mine run.....	Kansas City..	4.00	3.50	3.50	3.50	
Kansas screenings.....	Kansas City..	2.50	2.50	2.50	2.50@	2.75

\* Gross tons, f.o.b. vessel, Hampton Roads.  
† Advances over previous week shown in heavy type, declines in italics.

## Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

		Market	Freight	Latest	Pre-Strike	Feb. 26, 1923	March 3, 1923†
		Quoted	Rates	Independent	Company	Independent	Company
Broken.....	New York....	\$2.34			\$7.60@	\$7.75@	\$8.25
Broken.....	Philadelphia....	2.39		\$7.00@	\$7.50	7.75@	7.85
Egg.....	New York....	2.34		7.60@	7.75	7.60@	7.85
Egg.....	Philadelphia....	2.39		7.25@	7.75	7.75	
Egg.....	Chicago*.....	5.09		7.50	8.25	8.25	
Stove.....	New York....	2.34		7.90@	8.20	7.90@	8.10
Stove.....	Philadelphia....	2.39		7.85@	8.10	8.05@	8.25
Stove.....	Chicago*.....	5.09		7.75	8.25	8.25	
Chestnut.....	New York....	2.34		7.90@	8.20	7.90@	8.20
Chestnut.....	Philadelphia....	2.39		7.85@	8.10	8.05@	8.15
Chestnut.....	Chicago*.....	5.09		7.75	8.25	8.25	
Rango.....	New York....	2.34					
Pea.....	New York....	2.22		5.00@	5.75	5.75@	6.45
Pea.....	Philadelphia....	2.14		5.50@	6.00	6.10@	6.25
Pea.....	Chicago*.....	4.79		6.00	6.25	6.25	
Buckwheat No. 1.....	New York....	2.22		2.75@	3.00	3.50	
Buckwheat No. 1.....	Philadelphia....	2.14		2.75@	3.25	3.50	
Rice.....	New York....	2.22		2.00@	2.50	2.50	
Rice.....	Philadelphia....	2.14		2.00@	2.50	2.50	
Barley.....	New York....	2.22		1.50@	1.85	1.50	
Barley.....	Philadelphia....	2.14		1.50@	1.75	1.50	
Birdseye.....	New York....	2.22			2.00@	2.50	

\* Net tons, f.o.b. mines. † Advances over previous week shown in heavy type, declines in italics.



Coal Age Index 279, Week of March 5, 1923. Average spot price for same period, \$3.38. This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the U. S. weighted in accordance first with respect to the proportions each of slack, prepared tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913, 1918," published by the Geological Survey and the War Industries Board.

as they have been selling for two or three weeks. The Standard district may not be making much money but it is getting most of the available business with 6-in. lump moving at \$3@3.25, steam egg and nut at \$2@2.25 and screenings at \$1.30@1.40. On that market a small volume of Mt. Olive lump has been selling at \$4 around the city and \$4.50 to the country. Mt. Olive screenings bring \$1.75. But buying of every sort of coal is in small quantities. St. Louis is getting a little hard coal for the first time in several weeks and Arkansas semi-anthracite is again coming in.

### Kentucky Is Not Discouraged

Western Kentucky operators are getting enough business to absorb most of their output, even though it takes some lively pushing. Dealers and most large consumers with small stocks still on hand are using up those supplies steadily now and are buying cautiously. But railroads, with a heavy volume of freight to move, are buying with some freedom. This is largely contract business, however.

The outstanding feature of the present situation in Kentucky is that it is much better than last year. There are no big stocks in retailers' hands to interfere with present or spring business. Industrial consumption generally is much better in all sections than it was last spring. Prices of coal are much better than those of last spring and there are no labor, railroad or other serious troubles in prospect.

Milwaukee jobbers are worried so by the traffic jams at

Eastern gateways that they are now beginning to cancel bituminous orders which they had made for inland customers. Six weeks' deliveries are about the best that is promised them. The recent reduction of 75c. on Illinois domestic coal has not yet been reflected in Milwaukee because so much coal from that state's fields which was bought at the old prices is still on hand.

Around the Head-of-the-Lakes nobody is worrying much. Anthracite stocks on the docks are swept out almost to the last ton. Not since 1902 has such a clean-up been observed. But there is just enough coal in the bins of consumers and just enough of briquets, coke and other substitutes available to prevent complaint.

Estimated stocks of soft coal on the Superior docks Feb. 1 totaled 1,175,000 tons, which was low. Shipments off the docks have been steady, especially during February, which was 40 per cent better than January, but slow since then and weak prices are still the rule.

### West Does Some Business

In the mountain states of the West, coal trade is not so dull in spite of the return of soft weather. A general pick-up in industrial activity is absorbing a 60 per cent production at most of the Colorado and Utah mines and prices have remained fairly level. For once there is a place for the lignite slack of northern Colorado and the steam sizes of most other Colorado, Wyoming and Utah coals find ready acceptance.

In and around Kansas City, however, the market is quiet as a Midwestern village on a hot Sunday afternoon. Industrial demand is fair but warm weather has killed the domestic call and such surpluses of prepared sizes of Kansas and Oklahoma coals are piling up that the old, old question "what to do?" faces almost every operator. The list prices on domestic sizes have not been changed but undercuts, of course, are being made.

### Ohio Fields Show Greater Strength

More strength is showing in all Ohio fields due to curtailed output rather than to consumption. Buying on the part of both dealers and steam users in and about Columbus is general although orders are generally small. Dealers are not anxious to buy heavily, because of the lateness of the season and also because of the possibility of reduced prices on prepared sizes. Heavy reductions in lump and egg coals are looked for during this month.

General manufacturing concerns are using up reserves accumulated some time ago and are now buying from hand to mouth. Contracting is reported on a small scale; it is not expected to be active until after April 1. Embargoes are holding up shipments. Empties are slow in being returned and mines as a rule are operating but a day or two each week. The Hocking Valley is producing about 20 per cent and the same figures are reported from other fields.

Production in the eastern Ohio mines was cut into during the week ended Feb. 24 by the holiday and inadequate car supply. The output was 253,000 tons, the lowest of any week since the strike.

Operators in West Virginia are beginning to look forward to the opening of the Lake season as affording additional outlets for their product. Few if any mines along the Chesapeake & Ohio R.R. are getting more than a day and half's car supply per week. Mines along the Norfolk & Western are producing at the rate of about 35 per cent of capacity.

Car supply in Virginia shows a slight improvement, while the mines in northeastern Kentucky are still limited in output owing to poor car supply.

The Pittsburgh market remains steady, rather because of poor car supply than demand. Consumption has increased in the steel industry as mill operations have been increasing steadily for two months. Demand for domestic lump increased somewhat because of the cold snap.

Car supply along the Pennsylvania R.R. in central Pennsylvania is declared by operators to be worse now than at any time during the winter. Many operators have closed down rather than do business on the present basis. Conditions at the mines reached by the New York Central and B. R. & P. railroads are somewhat better.



There is some activity in the contract market at Buffalo. Figures proposed now are \$2.75@3 for Allegheny Valley mine-run, the lower figure appearing most often. The market is quiet and no immediate recovery is looked for.

### New England Bituminous Market

The bituminous market in New England territory is extremely quiet. Large consumers have comfortable reserves and with respect to future supply are simply marking time. Both all-rail and by water there is ample coal offering, and there is every indication the supply will exceed the demand during March and April.

All-rail there are still embargoes in effect that curtail deliveries here from several districts, but there is clearly enough coal moving to take care of current light requirements. Pressure to get steam coal for domestic use has eased off very materially, and with the approach of mild weather this sort of demand will cease almost entirely.

Operators of central Pennsylvania are striving not only to sell spot coal for March but also are making a thorough canvass for contract tonnage to see them through the summer and autumn. Buying in New England will be slow starting, and so much depends upon the Hampton Roads situation that it will be several weeks, if not months, before the Pennsylvania grades settle down into a season basis as to price. Contracts are being offered all the way from \$2.50 to \$4, depending upon grade, but consumers are counting upon either a marked reduction among all-rail coals or purchases from Hampton Roads, where prices have already dropped to last autumn's level.

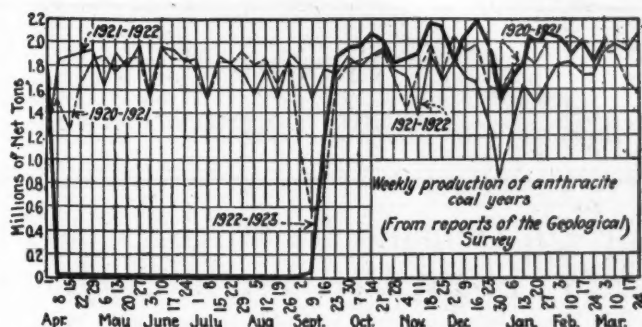
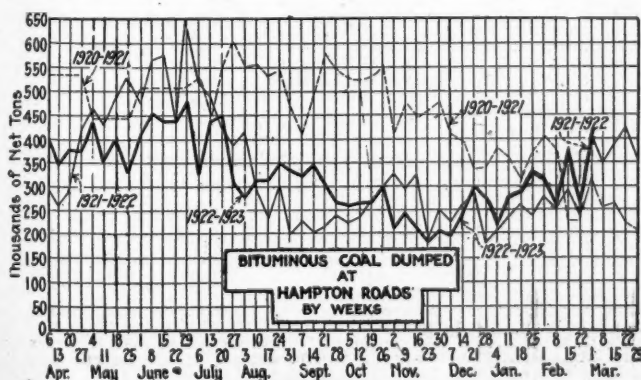
Accumulations continue at Hampton Roads with only mild demand even for Navy standard grades. The best fuel at \$6.25 is an easy purchase, and the less favorably known coals can be had at \$6, in each case per gross ton f.o.b. vessel. Tonnage is moving in measurably good volume on contract business coast wise, but offshore and along the line and to the west the amount of coal absorbed is relatively light. For distribution inland from Providence, Boston and Portland there is only scattering inquiry. Prices range upward from \$9.25 per gross ton on cars, but the market generally is spotty and quotations fluctuate.

Ice conditions in Long Island and Vineyard sounds have seriously interfered with boats and for nearly a week the Cape Cod Canal was blocked with ice in Buzzards Bay. Higher temperatures already are having their effect and no further trouble is expected. With boats moving freely there will be ample coal for all purposes.

### New York Shippers Look to Lake Opening

Water shipments from the New York terminals to New England increased somewhat but heavy ice in the harbors interrupted the unloading of the vessels. Local shippers look for a much brisker market following the opening of the Lake season. There were 2,108 cars at the New York terminals on March 2, as compared with 2,841 cars on Feb. 23.

Consumers in Philadelphia appeared to be less interested in the soft-coal market than during the previous week. Producers of high-grade Pennsylvania coals on the other hand, assert that they are hard put to fill all the orders they have in hand, and insist that the so-called market prices do not accurately represent the situation. Shippers say that car supply is inadequate and that they could find a market for a great deal more coal if cars were available.



Demand at Baltimore is poor. There was more than 100 per cent increase in the amount of coal exported from Baltimore during February over that shipped during the previous month, the tonnage during February amounting to 10,424 tons including 1,212 tons in bunkers, as compared with 4,379 tons in January, including 260 tons in bunkers.

### Anthracite

The anthracite market is much easier. New York State Fuel Administrators believe the crisis has passed and that only unusual conditions will again create a shortage. The purchase of substitutes has almost fallen into the discard, neither dealers or consumers taking any unless absolutely necessary. Dealers in Philadelphia are endeavoring to create reserve stocks notwithstanding the nearness of April 1.

The hard-coal situation at Baltimore is easier.

The production of anthracite in the week ended Feb. 24 was practically the same as in the week before and is estimated at 1,838,000 net tons, including coal shipped, mine fuel, local sales, and dredge and washery output, says the Geological Survey. Production was at a low rate on Washington's birthday and Saturday. Early returns on car loadings during the first four days of the week Feb. 26-March 3 indicate production at the rate of 2,100,000 tons for the week.

### How the Coal Fields Are Working

Percentages of full-time operation of bituminous coal mines, by fields, as reported by the U. S. Geological Survey in Table V of the Weekly Report.

	Jan. 1 to Apr. 1, 1922 Inclusive	Sept. 5 to Dec. 30, 1922 Inclusive	Jan. 1 to Feb. 17, 1923 Inclusive	Week Ended Feb. 17, 1923
U. S. Total	55.7	84.7	89.0	(a)
Alabama	64.6	84.7	89.0	(a)
Somerset County	74.9	36.3	29.4	25.6
Panhandle, W. Va.	51.3	57.3	55.9	59.0
Westmoreland	58.8	65.8	56.8	52.8
Virginia	59.9	55.7	52.7	49.5
Harlan	54.8	22.1	22.1	20.1
Hazard	58.4	16.4	19.3	14.4
Pocahontas	60.0	36.6	37.1	35.2
Tug River	63.7	28.8	33.0	30.3
Logan	61.1	26.2	30.7	28.0
Cumberland-Piedmont	50.6	31.7	44.2	40.8
Winding Gulf	64.3	30.4	32.3	27.8
Kenova-Thacker	54.3	42.4	38.6	38.0
N. E. Kentucky	47.7	28.4	27.9	(a)
New River	37.9	31.6	34.6	32.9
Oklahoma	59.6	59.1	51.3	42.6
Iowa	78.4	75.9	80.1	87.1
Ohio, Eastern	46.6	40.5	34.1	35.6
Missouri	66.8	76.3	76.2	75.1
Illinois	54.5	49.9	52.2	47.6
Kansas	54.9	55.9	51.7	49.9
Indiana	53.8	37.7	54.4	53.4
Pittsburgh†	39.8	41.2	64.5	61.3
Central Pennsylvania	50.2	53.4	42.8	41.1
Fairmont	44.0	35.5	36.2	29.4
Western Kentucky	37.7	32.4	34.0	32.9
Pittsburgh*	31.9	56.1	32.6	31.1
Kanawha	13.0	15.6	21.6	21.9
Ohio, Southern	24.3	38.1	35.6	29.3

\* Rail and river mines combined.

† Rail mines.

(a) No report.

### Car Loadings, Surpluses and Shortages

	Cars Loaded	
	All Cars	Coal Cars
Week ended Feb. 17, 1923	817,778	180,988
Previous week	853,289	190,860
Same week in 1922	773,275	188,783
	Surplus Cars	
	All Cars	Coal Cars
Feb. 14, 1923	27,172	7,094
Feb. 7, 1923	28,628	7,438
Same date in 1922	278,481	70,523
	Car Shortage	
	All Cars	Coal Cars
Feb. 14, 1923	72,855	38,123
Feb. 7, 1923	70,522	37,626
Same date in 1922	773,275	188,783

## Foreign Market And Export News

### Foreign Demand for British Coal Still Strong; Slight Decrease in Production

The Welsh market continues steady. France is buying heavily while business with Italy is substantial. South America, India, coaling stations and Egypt have taken heavy tonnages recently. A feature of the market is the sustained Continental demand.

The market in the north of England remains very strong. The increasing scarcity of fuel in Germany, France and Belgium is indicated in the pressing demand from these countries.

Production in the British mines during the week ended Feb. 17 was officially reported at 5,560,000 tons, says a cable to *Coal Age*. This was 7,000 tons less than the previous week, and the smallest tonnage produced since the first week of the year, when it was 4,384,000 tons.

In an effort to relieve the dock congestion at Cardiff the coal tipplers and trimmers have agreed to experiment with the three-shift system for three months. Before the war these men worked three shifts of eight hours each, but for the past five years they have only worked two shifts of eight hours. With the renewed demand for Welsh coal the docks have become greatly congested.

During the week ended Feb. 9 there was an increase of 72,172 tons to 618,034 tons in the British Channel exports. Exports from Cardiff and Newport, in tons, were:

France	122,302
Italy	97,074
South America	58,531
Spain	29,298
Portugal	13,005
United States of America	37,687
Canada	3,518
British coal depots	87,072
Other destinations	54,526

Total ..... 503,013

#### Business Brisk at Hampton Roads

Business has been brisk at Hampton Roads. The market stiffening in consequence, and increased coastwise movements gave promise of better conditions in the trade. A generally stronger tone was the feature of last week's market.

The strengthening of prices was regarded by shippers as only temporary. The belief was general that prices are due for a still further slump, and that the consequence will be ability of American shippers to get back into export business which has been negligible at Hampton Roads.

General shipping showed improvement, bringing activity to the bunker trade. All piers operated at full force, with stocks somewhat cut down but with movement from the mines improving.

#### Raise Wages in French Mines

At a conference held at Douai between the mine owners of the Nord and Pas-de-Calais and the delegates of the Federation Nationale des Travailleurs du Sous-sol, the non-communist miners' organization, whose members had remained at work, it was agreed that the wages of adult workers should be raised, as follows: Two fr. per shift as from Feb. 1, retroactively, and 1 fr. 25, as from Feb. 15. The wages of boys and girls are to be proportionately increased.

The increases restores the wages in the Nord and Pas-de-Calais to the scale in force in December, 1921.

To the delegates of the same faction of miners in the Loire coal fields the mine owners have offered an increase of 3 fr. per shift, which was the decrease in wages put into effect in August, 1921.

#### French Miners Formulate Demands

The Federation Unitaire des Travailleurs du Sous-sol, the communist organization of French miners, early in February formulated the following demands, applicable to all French coal fields.

"Return of wages to their maximum level since the armistice plus 1 fr. 50 per shift for underground and 2 fr. 50 for surface workers.

"Incorporation in wage rates of the indemnity for high living costs.

"Creation of workmen's committees.

"Suppression of tax deductions from wages."

Strikes and the lack of coal as a result of the interruption of shipments from the Ruhr have caused a scarcity of French industrial coals and the government has given instructions that the railway requirements must be met first and then the ordinary industrial wants.

Between Jan. 19 and the middle of February, France received practically no fuel shipments from Germany, although it was expected they would be resumed shortly.

#### Italian Coal Imports in 1922

Coal imported into Italy during 1921-22 for the Italian State Railways and the Ministry of Finance totaled 3,731,604 tons, against 1,557,280 tons during the year 1913-14. The coal used during the past year on the Italian state railways totaled 184,955 tons, and in the Italian navy 184,955 tons. British fuel shipped to Italy amounted to 550,332 tons; American, 182,306; while German coal imported on reparation account totaled 2,792,761 tons.

#### Export Clearances, Week Ended Feb. 24 From Hampton Roads

FROM HAMPTON ROADS	
For Cuba:	Tons
Amer. SS. Carozal, for San Juan	4,002
Nor. SS. Sangstad, for Havana	3,716
FROM PHILADELPHIA	
For Cuba:	
Dan. SS. Sarmatia, for Havana	...
Nor. SS. Gaute, for Havana	...

#### Hampton Roads Pier Situation

N. & W. piers, Lamberts Pt.	Feb. 22	March 1
Cars on hand	1,287	962
Tons on hand	88,242	61,183
Tons dumped for week	88,096	131,121
Tonnage waiting	35,400	14,300
Virginian Ry. piers, Sewalls Pt.		
Cars on hand	1,542	1,428
Tons on hand	89,370	82,830
Tons dumped for week	63,021	132,174
Tonnage waiting	9,226	30,282
C. & O. piers, Newport News		
Cars on hand	1,323	591
Tons on hand	72,835	70,055
Tons dumped for week	84,207	92,070
Tonnage waiting	6,110	5,253

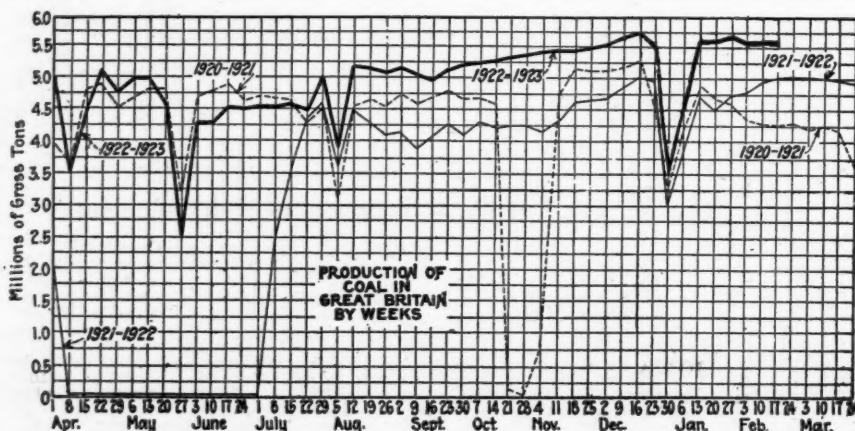
#### Pier and Bunker Prices, Gross Tons

PIERS	
	Feb. 24
Pool 9, New York	\$7.25@ \$7.50
Pool 10, New York	6.50@ 6.75
Pool 11, New York	5.50@ 6.00
Pool 9, Philadelphia	6.95@ 7.15
Pool 10, Philadelphia	6.35@ 6.65
Pool 11, Philadelphia	5.55@ 6.00
Pool 1, Hamp. Roads	6.25@ 6.50
Pools 5-6-7 Hamp. Rds.	6.25
Pool 2, Hamp. Roads	6.25@ 6.50
BUNKERS	
Pool 9, New York	\$7.50@ \$7.90
Pool 10, New York	6.80@ 7.25
Pool 11, New York	6.80@ 6.50
Pool 9, Philadelphia	7.15@ 7.50
Pool 10, Philadelphia	6.70@ 6.95
Pool 11, Philadelphia	5.90@ 6.35
Pool 1, Hamp. Roads	6.50
Pool 2, Hamp. Roads	6.50

#### Current Quotations British Coal f.o.b. Port, Gross Tons

Quotations, by Cable to Coal Age	
	Feb. 24
Admiralty, large	29s. @ 29s. 6d.
Steam, smalls	22s. 6d.
Newcastle:	
Best steams	28s. 6d. @ 30s.
Best gas	29s. @ 30s.
Best bunkers	28s. @ 32s. 6d.

† Advances over previous week shown in heavy type; declines in italics.





## News Items From Field and Trade

### ALABAMA

The Sartain-Boyer Coal Co., with headquarters in Jasper, has been incorporated with a capital stock of \$150,000, of which \$126,000 has been paid in. Incorporators are Charles M. Sartain, Mrs. E. F. Guy, F. M. Sartain, J. H. Boyer and Frank Boyer. The company will engage in coal mining in Walker County.

John Hays Hammond, chairman, and Thomas R. Marshall and Clark Howell, associate members of the U. S. Coal Commission, arrived in Birmingham for a visit of several days on March 7 and will make an investigation of the several phases of the industry in this district.

### ARKANSAS

Sept. 10 has been set as the date for the new trial of the suit of the Coronado Coal Co. against the United Mine Workers of America in the United States District Court at Ft. Smith. The Supreme Court of Arkansas last summer reversed a verdict of \$600,000 that was obtained by the coal company. The suit grew out of the destruction of property of the Coronado Coal Co., the Mammoth Vein Coal Co. and a group of other mines, known as the Bache Denman Coal Syndicate, in the summer of 1914, during the labor troubles in the Hartford Valley of Sebastian County.

### CALIFORNIA

The educational committee of the Woman's Auxiliary of the American Institute of Mining and Metallurgical Engineers have announced a free scholarship worth \$500 a year to commence next autumn. It is open to but one citizen desirous of studying for a degree in mining or metallurgy at a standard school of mines. Candidates may send their names to Mrs. Horace V. Winchell, 728 W. 28th Street, Los Angeles.

### COLORADO

D. Harrington, supervising mining engineer of the U. S. Bureau of Mines, during the middle of February, spent several days at Dawson, New Mexico, investigating the recent explosion in the mines of the Phelps Dodge Corporation, which killed 122 men.

Wood & Weber, consulting engineers, of Denver, have been entrusted with the design of the power plant and hoisting equipment for the mine of the Alamo Coal Co., near Walsenburg. A 1,250-kw. turbo generator has been purchased and will be installed in the summer, along with the necessary boilers and auxiliary equipment. A large electric slope hoist is yet to be bought.

### ILLINOIS

Coal rights under 1,300 acres of land north of the Sangamon River, near Springfield, a part of the Carpenter estate, have been sold to the Midland Counties Coal Co., allied with the Peabody interests. The coal rights brought the sum of \$16,500. The Midland Counties Coal Co. was incorporated Dec. 15, 1913, with capital stock of \$5,000. The incorporators were Arthur W. Underwood, Nathan E. Smyser and Charles R. Young. The company certified to an increase in its capital stock from \$5,000 to \$3,000,000 Dec. 17, 1913. The certificates were signed by Arthur Woodward as president and Frank M. Wright as secretary. The offices of the company at present are at 72 West Adams Street, Chicago.

The Southern Mining Co., of 214 North Vermillion Street, Danville, has been incorporated with a capital stock of \$150,000. The incorporators are Walter L. Millner, Richard Y. Hoffman and Kenneth M. Fiske.

Mike Miller, 45 years old, was killed and five other miners were injured when they were caught under a fall of coal at the mine of the Franklin County Coal Co., at Benton, Ill. The men were working on the night shift and were placing props in the mine when the accident happened.

The Clover Leaf Coal Co., 1201 Public Square, Marion, has been incorporated with a capital of \$150,000 by R. E. Mitchell, H. W. Ragel and Wm. H. Warder.

The Clyde Coal Co., Cicero, has increased its capital stock from \$20,000 to \$25,000.

Work will be started in the next few weeks on the erection of a new five-track steel tippie at Mine No. 1 of the Wasson Coal Co., at Harrisburg. The new tippie will be modern in every respect, will be equipped with the latest machinery known in the coal preparation business and will handle over 3,000 tons per day. The new tippie will replace their old four-track tippie and will be the most modern in the district. Machinery made by the Jeffrey Mfg. Co. will be installed in the new plant and work will be started not later than April 1.

The workings of mine No. 18 of the By-Products Coal Corporation at West Frankfort were damaged recently when a fire was discovered raging on the inside of mine. The portion of the mine in which the fire was discovered was immediately sealed off in an attempt to smother the flames. An estimate of the amount of loss from the fire has not been announced by the company.

The offices of the Franklin County Mining Co. at Benton suffered a recent loss by fire. The fire started from an overheated stove and only by prompt action on the part of the Benton fire department was the building saved.

### INDIANA

Operators of coal mines at West Clinton, owned by the Jackson Hill Coal & Coke Co., assert that additional demands made by 800 miners on working conditions has resulted in the men quitting work and tying up the operations of the three mines owned by the company, which have a daily capacity of 5,000 tons. The officials said that about a month ago the miners in one of the plants made demands to be transported to work and that the time of working commence when the miners arrive at the bottom of the shaft. This dispute was settled but recently the workers made additional demands of a similar character and called out the workers of the other two mines in the grievance, officials of the coal company declare.

The Star Coal Co., Jasonville, has been chartered with a capital of \$20,000. The directors are: W. C. Warrick, I. S. Ritchey, Monroe Beatty and Robert E. Mason.

The Mt. Pleasant Coal Co., Terre Haute, has increased its capital from \$25,000 to \$50,000.

Coal has been reached in the No. 5 vein at the shaft of the Deep Vein Coal Co. south of Princeton, at a depth of 420 ft. The vein is 8 ft. 9 in. thick and is a fine grade of coal. The company expects to open one of the largest and most modern mines in the state and has a block of leases of more than 5,000 acres. The new shaft is concreted to a depth of more than 60 ft. down to the solid rock. A steel tippie will be erected and when the mine reaches full production more than 1,000 men will be employed. Switches have been laid and during the summer these will be connected to an interurban electric line. The opening of the Deep Vein mine is the first of several new mining operations started in that vicinity. The coming summer will see a greatly increased coal output from the Gibson County mines. The Francisco Coal Co. now has two of its mines in operation and work of sinking the shaft for the third will start during the summer. The General Fuel Co. is proceeding steadily toward putting its new mines in operation. One is virtually completed and the shaft of the second is nearly finished. The company will sink a total of four mines.

Can a miner who is driven out of a community by United Mine Workers collect damages from the union? This is one of the questions involved in the suit of John W. Smith, of West Frankfort, Ill., against Local 1,005 of the union for \$3,000 damages and for a permanent injunction to prevent that local from molesting him at work. The suit has been transferred in the federal court from Indianapolis to Evansville and will be heard by Judge A. B. Anderson some time in April.

### IOWA

The Lanning Coal Co., Oskaloosa, has been incorporated with capital of \$13,000. F. D. Lanning is the president and C. E. Lanning, secretary-treasurer.

### KANSAS

A special dispensation by the present board of District 14, United Mine Workers of America, upon assuming office the first of this year, granting relief from a \$15 fine imposed upon miners of the district who refused to walk out during the general strike last summer, has resulted in 1,300 of the 2,000 men liable to the fine returning to the union, Harry Burr, district secretary and treasurer, has announced. Twenty new locals have been chartered in the district this year, according to Mr. Burr. The dispensation ended March 1.

Representatives of the operators and miners of Kansas will meet in Kansas City some time before March 9 to establish a machine scale for Kansas, where none now exists.

The Sheridan Coal Co. of Pittsburg, the largest company in the Southwest district not in the Southwestern Interstate Coal Operators' Association, has just signed a contract on working rules with the United Mine Workers of America. The Sheridan company withdrew from the organization during the general strike and operated some of its mines under a co-operative arrangement with some of its miners.

### KENTUCKY

The Western Kentucky Coal Operators and representatives of the United Mine Workers of District 23 will meet in Louisville March 12 to negotiate a new wage scale, it has just been announced in Louisville. The present scale, which expires April 1, calls for a maximum of \$6.95 a day for inside men; 74 to 76c. a ton for machine-mined coal and \$1.05 for picked coal. Lonnie Jackson, district president of the mine workers, said he expected no trouble in reaching an agreement.

The Hazard Coal Operators' Association is investigating the possibilities of using radio receiving and sending sets at Cincinnati, Lexington, Louisville, Hazard and other points with a network of receiving sets through the field to aid the operators in keeping posted on what is going on. Telephone service between the fields and markets has been far from satisfactory. A committee composed of W. E. Davis, of Lexington; James Bonnyman, of Cincinnati, and Prentice Burkingham, of Cincinnati, was named at a meeting in Lexington on Feb. 16, to look into the matter.

Two five-track tipples are now in process of construction at the mines of the Gibraltar Coal Mining Co. at Central City. The tipples are exact duplicates designed and to be erected by Allen & Garcia. They are equipped with shaker screens, loading booms and picking tables to make these coal preparation plants highly efficient and of ample capacity. The structures are to be of steel with corrugated zinc siding and roofs of the same material having areas of corrugated wire glass over the picking tables.

Captain Frank Horn, superintendent of the Coneva Coal Co., was shot and killed presumably by Monroe Kilborn and whisky runners at Kilborn's home near Hazard, Feb. 16. Kilborn, who had been discharged by the company, is alleged to have brought whisky into camp. Captain Horn went to Kilborn's home in connection with the liquor running, and is said to have been shot eight times. His gun was found by his body, and had not been discharged.

Reports from Hazard, Letcher and other eastern Kentucky counties are that congestion on railroads serving Kentucky is such that many embargoes have been placed and sidings in the fields are loaded with cars waiting to be turned over to Northern roads, resulting in movement from mines in the Elkhorn-Hazard districts being very slow. Movement of empties into the fields is very light and loading has dropped to a comparatively low basis.

The Illinois Central R.R. has started grading for its new eighteen-mile connection in western Kentucky from Central City to Madisonville, which will run through a rich coal district and open a number of new mines, at the same time giving shippers in the Madisonville section improved outlet.

Lonnie Jackson, president of United Mine Workers, District 23, western Kentucky, is arranging for a conference in Louisville on March 12 with western Kentucky coal operators relative to deciding on a new wage scale, the present two-year contract expiring April 1. During the big mine strike last spring western Kentucky continued operation under a two-year contract which contained a clause preventing a strike at that time. The present scale calls for a minimum of \$6.95 a day for inside men; 74 to 76c. a ton for machine-mined coal and \$1.05 for picked coal.

The state's \$1,000 reward for the capture of the murderers of Captain Frank Horn, manager of the Coneva Coal Corporation, has been collected by a relative of the two killers and will be used in their defense. Ira Kilburn, the brother of one of the men and half-brother of the other, rode into Hazard Feb. 26 with the two riding behind him. He formally surrendered them and collected the \$1,000.

The world's production record for any coal mine is now claimed by the United States Coal & Coke Co. for its Lynch mine, in the Elkhorn seam at Lynch. The mine, which is a drift operation working 40 shortwall cutting machines and 24 locomotives, hauled out and loaded 12,820 tons one day in February.

Suit has been filed in Louisville by the W. A. Wickliffe Coal Co. against the Kentucky Wagon Mfg. Co. for \$3,888.05, representing eight notes executed by the company in 1921 in payment of coal shipped to its plant at Louisville. The company has been reorganized as a part of the National Motors Corporation and has been involved in a number of suits of late.

Trial started at Henderson on Feb. 19 of Ollie Gibbons and Mrs. Gus Noffsinger, in connection with the killing there of Gus Noffsinger, manager of the Southland Coal Mining Co., in December. Mr. Noffsinger was killed with a hammer in his own yard.

R. C. Parsons, superintendent of transportation of the Louisville & Nashville R.R., will be chairman of the new rating commission to apportion cars to the various mines served by the L. & N. Who the other two will be has not as yet been decided, but they will be railroad men. The commission will make a personal inspection of all mines served by the road and will cover Kentucky, Tennessee, Illinois, Virginia and Alabama.

Nine miners and Albert Scott, assistant state mine inspector, were injured in a gas explosion in the mine of the Madison Coal Corporation, within two blocks of the business center of Central City, Feb. 23. Two of the men were injured seriously. Scott and the miners were making an inspection of the mine and were in an abandoned mine when one of the men is said to have lighted a match. The explosion followed. The men were able to get to the bottom of the shaft unaided. The mine was not damaged.

Alben W. Barkley, Representative from Paducah, who is after the Democratic nomination for governor, in a talk at Danville on Feb. 19 said he favored production tax on all Kentucky coal based on the value at the mine. He argued for exemption of real estate taxation except for school and road use, although he admitted that this was impossible at this time.

### MINNESOTA

The Northwestern Coal Dock Operators' Association has filed with the United States Coal Commission an interesting statement of the coal situation as the members view it. They declare flatly that the entire cause of extreme prices on coal at all times has been due to the railroads failing to function adequately because of their lack of cars and of locomotives. The statement is from H. E. Smith, of St. Paul, as president of the dock association, and declares that there cannot be a coal shortage, except on account of a strike, for the reason that the mines are so overdeveloped that they can produce a great deal more coal than can be consumed.

The fight in Minneapolis and St. Paul over the award of the water power of the high dam in the Mississippi River to the Ford Motor Co. interests has resulted in some interesting reports as to Mr. Ford's intentions. The latest is that he will build a railroad from the docks at Duluth and Superior to St. Paul, for the purpose of hauling his own freight. The road is to be for freight only. Ford interests also have been negotiating for the purchase of a coal dock at Duluth.

### MISSOURI

Two bills before the Missouri State Legislature are being opposed by the coal men of the state. One would require operators to provide a shower bath with hot and cold water for every ten men employed in a mine, and a wash basin for every three men. The other would levy 1c. on every ton of coal mined to support the state mine inspection department, instead of the two mills levy now in effect. Both bills have passed the House and are before the Senate. The bathroom bill is especially obnoxious because of the inaccessibility of water to many mines of the state. Another bill of interest to coal men is one re-

quiring an inspector for every mine in the state to examine the mine before the men are permitted to enter. An inspector is now required only at mines known to be gaseous.

A company has been formed at Glasgow to develop a coal mine on a tract of land about three miles from the city, and work on the project will start soon. A railway switch will be built to the mine so that the coal can be loaded at the pit and shipped out from there to the markets.

A conference of representatives of operators and miners of Missouri, in session in Kansas City since the end of the wage conference, Jan. 8, has adjourned without reaching any agreement to revise the machine working conditions. The matter has been checked up to individual operators and the miners in their employ, with the understanding that if they agree to any changes their decision shall be referred to the Southwest Mine Operators' Association for approval or disapproval.

### NEW YORK

Plans for recapitalization of Burns Bros., approved by a special committee of directors in December, were adopted by the full board Feb. 28 and put in shape for presentation to the stockholders at their meeting at Jersey City, March 31. Ratification of the plan by the stockholders will give the company a capitalization of \$10,000,000 in preferred stock and 500,000 shares of common stock. On the basis of present holdings there will be outstanding 80,944 shares of preferred and approximately 350,000 shares of common. The reorganization provides for the retirement of the total amount of \$1,208,000 of 7 per cent cumulative preference stock at a figure of \$120 plus accrued dividends and the retirement of \$2,975,000 of the 7 per cent cumulative preferred stock. As Burns Bros. has no funded debt or outstanding notes, this makes the 80,944 shares of Class "A" common stock a first lien on the company's assets.

An executive conference, in which General Goethals, State Fuel Administrator, district administrators from all over the state, and John F. Birmingham, president of the Delaware, Lackawanna & Western Coal Co., and D. Fred Williams, vice president of the Hudson Coal Co., took part, was held at the office of the State Fuel Administration at 165 Broadway, New York City, March 1. The total number of emergency complaints investigated during February was 7,163, it was announced, and in 5,868 cases aid was given by the Fuel Administration. January's complaints totaled 4,495, with aid given in 3,275 cases.

W. S. Simms, who has been associated with the Gano Moore Coal Mining Co., the Crescent Fuel Co. and the Fort Dearborn Coal Co., has joined the forces of the Cory Mann George Corporation.

Michael Tuck, president of the Titan Fuel Corporation, 42 Broadway, has gone to St. Petersburg, Fla., for a month.

### NORTH DAKOTA

The Center Coal Co. has been incorporated by H. O. Hagenston, of Aberdeen; S. L. Houser and Robert Plaggmeier, of Leith, its purpose being to develop lignite production at Leith. The company has been working its property for some time and now it is being shaped up for further development. Over \$15,000 in new equipment has been installed this summer and the company is now selling between 400 and 500 tons in this city alone every month.

### OHIO

The Merrimac Fuel Co., with M. F. McDermott as president, W. J. Quinn, vice-president; W. J. Schroyer, vice-president, and C. R. Thomas, as secretary and treasurer, has been incorporated under the laws of Ohio and will have headquarters at 817 Dixie Terminal Building, Cincinnati.

The following companies have been chartered: The Slater Coal & Supply Co., Lorain; capital \$50,000; George L. Slater, S. S. McFadden, F. J. McFadden, D. A. Cook and Mayme J. Ambrozio. The American Export & Inland Coal Co., Cincinnati; capital \$100,000; E. F. Heasley, Stuart R. Ducker, M. Wellman, R. Johnson and Arthur W. Gordon. The Merrimac Fuel Co., Cincinnati; capital \$50,000; W. J. Quinn, H. E. Joseph, Ray E. Manley, Mary Barrett and Fanny Sachs. Sanders Run Coal Co., Pittsburgh, Pa.; capital \$10,000; incorporators, J. W. Plitcher, E. Glick, Charles Briskin and Philip Pearlman, all of Pittsburgh.

The so-called illegal coal contracts which were entered into by Edward J. Shattuck, purchasing agent for a time under the ad-

ministration of Governor Harry L. Davis, were called to mind recently when the Ohio Legislature was asked to include \$80,000 in the general appropriation bill to pay for coal delivered to various state departments and institutions before the contracts were declared illegal. The recommendation for payment was made by the Sundry Claims Board. The Finance Committee of the Ohio Legislature will now take up the question if payment is to be included in the general appropriation measure.

### OKLAHOMA

The Henryetta Chamber of Commerce is sending out hundreds of invitations to coal dealers in Oklahoma and Texas, inviting them to hold their annual March convention in Henryetta in connection with the third annual state coal exposition and King Coal Carnival.

### PENNSYLVANIA

Shipments of coal are continuing to run considerably above past records for this time of the year, according to statements made by various railroads. The Delaware, Lackawanna & Western, which with the Philadelphia & Reading and the Lehigh Valley is one of the most important coal-carrying systems, reported that in January the road handled 224,000 cars more coal than in January, 1922, and 245,000 more than last December. The road has caught up with production and is able to make shipments as rapidly as the mines can produce the coal.

A conference was held recently at the offices of the Department of Mines at which Joseph J. Walsh, chief of the department, and Frank Hall, deputy, discussed with E. A. Holbrook, dean of the School of Mines, Pennsylvania State College, and J. W. Paul, Federal Bureau of Mines, methods of bringing the work of the state department into closer harmony with the latter organizations.

A resolution recommending to Governor Pinchot the advisability of the creation of a permanent body that would have general power to supervise the distribution of coal within the state was introduced on Feb. 27 in the House of Representatives at Harrisburg by Representative Richard D. Burns, Philadelphia. Under the rules it was laid over for printing before action was taken.

Companies throughout the state employing coal and iron police appointed by the Governor have been requested in a letter sent to them by Governor Pinchot to furnish detailed information regarding the men in their employ. Accompanying the letters were application forms designed to show the qualifications and previous record of men seeking appointment. The Governor's action grew out of his recent announcement that commissions to coal and iron police would not be issued indiscriminately.

Employees of the H. C. Frick Coke Co. and other subsidiaries of the United States Steel Corporation in the Connellsville region who are beneficiaries of the United States Steel and Carnegie Pension Fund received a total of \$108,988.89, or almost 9 per cent of the grand total of \$1,266,661.74, disbursed by this agency during 1922.

River dredgers of anthracite coal, who have been paying their state tax under protest and been considering a court contest to avoid payment, are almost universally making returns to the state on the basis of 30c. a ton on all coal salvaged. This cost on the coal wharves is considered entirely too low by Samuel S. Lewis, Auditor General, who probably will take prompt action. Coal dredging is carried on in only half a dozen counties, but from all of these come the uniform price. River coal is selling at \$1.25 a ton and higher and the 30c. price as representing the cost is believed to be too low.

The Fowler bill to repeal the anthracite coal tax law of 1921 was reported out of committee in the House of Representatives at Harrisburg on Feb. 27 with an affirmative recommendation. A determined effort to have the tax law repealed is said to be under way. It is probable, however, that if the bill is to pass it will provide that the law remain on the statute books until Jan. 1, 1925. This amendment is expected soon. The bill passed the House Feb. 28 on first reading. When read by its title the repealer was passed quickly in its first stage toward becoming a law. Whatever fight is contemplated against the repealer will come on the second and third readings, but supporters of the measure assert that they will pass it despite the opposition. The present tax added approximately 12c. to the cost of a ton of coal.

Scaled proposals will be received at the U. S. Engineer's office, Philadelphia, until noon, March 22, and then opened, for approximately 15,000 tons of semi-bitumi-



nous coal for use on the floating plant in the Philadelphia engineer district during the period April 1, 1923, March 31, 1924.

Gas flames raging for several minutes around a group of miners who were drilling a rock hole at the Kaska William colliery, near Pottsville, Feb. 21, resulted in the death of four miners and one in a critical condition. The explosion was not a violent one and but little damage was done the interior of the mine. The dead are Victor Lessau and Michael Broatus, of New Philadelphia; Martin Collier, of Tuscarora, and Anthony Wybikis, of Port Carbon. Anthony Blazner, Edward Sedar and John Triel, of New Philadelphia, were burned and indications were that Blazner will die.

A strike of four thousand miners employed at Nanticoke and Glen Lyon by the Susquehanna Collieries Co. was settled Feb. 22, when the men went back to work. Despite the holiday, each of the collieries that had been tied up for a week had a normal force of men. The strike started Feb. 16.

Barnum breaker, at Avoca, one of the oldest operations of the Pennsylvania Coal Co. was abandoned Feb. 28. Suspension is due to the completion of a tunnel which makes it possible for the coal to be sent to No. 9 breaker, at Hughestown. The tunnel was put through by Eugene Sullivan, an Avoca rock contractor. An appreciable saving in cost of operation will be effected by the new arrangement. Within the next few months the mines of the Barnum colliery will be electrified.

Dr. Royal A. Meeker was appointed State Commissioner of labor and industry by Governor Pinchot on Feb. 26. Dr. Meeker has been chief of the scientific division, international labor office of the League of Nations, since August 1, 1920. He succeeds Dr. Clifford B. Connelley. The Senate has confirmed the appointment of Dr. Meeker.

## UTAH

The State Securities Commission has granted the Pahvant Coal Co. permission to sell \$600,000 worth of bonds, proceeds to be used in developing coal lands in Carbon County, where the company owns 640 acres. C. A. Quigley, formerly well known in the automobile business, is president of the company, and W. N. Wetzel is to be the manager. The company is incorporated for \$2,000,000. It is planned to have this property producing next winter.

James C. Davis, as Director of Railroads, has filed suits against four prominent local coal operating companies to recover on freight charges alleged to be due from Dec. 1, 1918, to March 1, 1920. The Spring Canyon Co. is sued for \$1,359.09 said to be due for transporting 182 cars of coal from their mines at Storrs. The Independent Coal & Coke Co. is sued for \$2,015.71 for 242 cars between the same dates. The Carbon Fuel Co. is sued for \$336.81, and the Standard for \$542.30. The plaintiff claims the money is due as additional charges.

Governor Charles R. Mabey has signed the bill relating to certification for mine bosses which required that none but American citizens should be permitted to act in that capacity, except in the case of persons who have applied for citizenship.

## VIRGINIA

Directors of the Chesapeake & Ohio and other Van Sweringen lines, on a tour of inspection of their lines, stated that a \$3,000,000 coal pier for Newport News would be one of the principal items in a program for expending \$8,000,000 on expansion of facilities. The plans for this pier, it is understood, have already been drawn. It also is planned to order about 2,500 new freight cars, rebuild about 3,000 freight cars and order 19 new locomotives.

At the regular meeting of the stockholders of the Empire Anthracite Co., at Pulaski, March 14, all stockholders will go on record as for or against the proposition to sell the entire holdings.

## WEST VIRGINIA

Collection of the "check-off" is forbidden under the terms of Senate Bill 263, introduced in the West Virginia Legislature by Senator McClaren of McDowell, upon request. This measure provides that no persons, firm or corporation in West Virginia shall hereafter enter into any contract for the collection of or collect any moneys commonly known as the "check-off," due to employees, from employers, over their payrolls for any purpose whatsoever except fees for medical attention, rent, etc. Violation of the provisions mentioned is made a misdemeanor.

The Consolidation Coal Products Co., in which New York people are interested, will erect in Fairmont a small byproduct plant in which coke, gas and other coal byproducts will be manufactured. Machinery is ready to be installed as soon as the building is completed. There will be the usual retool for the treatment of coal, with the necessary mechanical and electrical driving machinery. The tar equipment will consist of two steel storage tanks of a capacity of 20,000 gallons each, one tar decanter with a capacity of 1,500 gallons and one tar pump tank with a capacity of 300 gallons.

Organization of the Hancock Coal & Clay Co. with a capital stock of \$50,000, presages the development of coal and clay deposits in Hancock County. Headquarters of the company are to be at Weirton. The following are interested in the new company: M. George, George Bollers, James Potts, O. M. Hoffman and Louis Zokos, all of Weirton.

An agreement has been reached between some northern West Virginia coal operators and officials of District No. 17, United Mine Workers of America, on a new wage scale. The agreement negotiated represents an agreement among individual operators. There are a number of coal companies though not a party to any agreement, as for instance some of the companies operating in the Elkins region and also in other parts of the district. The new agreement is similar to the agreement which has been in effect since the settlement of the strike last summer, and is for another year. There are a few minor changes relating to working conditions. The minimum rate fixed is 60.7c. per ton for miners producing high coal in machine mines. Where working conditions are not so satisfactory the rate is as high as \$1.00 per ton. Under the scale agreed upon day men will receive from \$6.55 to \$8.10 a day.

Miners and others interested will be afforded a short course in coal mining between June 11 and July 21, according to an announcement by Prof. A. C. Callen, head of the department of coal mining of West Virginia University. It is estimated that between 150 and 200 men will attend the short course. The course is intended to assist mining men to obtain certificates of competency as mine foremen or firebosses and to give the man with a certificate even a more thorough knowledge of coal mining.

The New River Co., the largest company operating in the New River field, has been successful in having set aside for sixty days the order of the Interstate Commerce Commission, recently made effective, limiting joint mines to a 100 per cent supply instead of a 150 per cent supply of cars. Suspension of the Interstate Commerce Commission regulations was covered in an order entered by the U. S. District Court for the Southern District of West Virginia early in February. Circuit Judge Edmund Waddell, Jr., and District Judge George W. McClintic signed the suspension order. Circuit Judge Charles A. Wood dissented.

The Supreme Court of West Virginia has been called upon to determine the ownership of coal rights in a tract of 110 acres of land in Monongalia County from which gas and oil is being taken, in the case of Blake Lemley Ramage against the South Penn Oil Co. The plaintiff contends that the right to mine coal never passed and that he owns the coal deposits. The lower court decreed the title to the coal land to be in the plaintiff.

The sale of an additional block of stock of the Coal River Collieries Co. will be used in order to permit additional development of the property of the company. The capital stock has been increased, according to an announcement made by Harry Leaberry, president, from \$2,000,000 to \$2,500,000. The stock is owned entirely by the members of the Brotherhood of Locomotive Engineers. The company owns a block of 10,000 acres of coal land on Coal River, where extensive improvements are being made and where the construction of a large steel twin tippie is now nearing completion.

Machinery rather than men will be relied upon to a great extent in a mine which is being opened by Paul Hardy and associates in the high-volatile territory served by the Norfolk & Western. The mine is expected ultimately to produce 2,500 tons of coal a day, which will be cut, loaded, hauled and dumped by machinery. Not more than 50 men at the most will be employed. As this may be the means of solving labor problems, coal men in the southern part of the state are watching the experiment with interest.

The Mellon interests of Pittsburgh have acquired control of 27,000 acres of coal land in Boone County not far from Madison on

the Pond fork of Coal River and on the Coal River division of the Chesapeake & Ohio Ry. It was purchased from the Wharton estate, of Philadelphia, for a consideration said to approximate \$2,700,000. Coal produced at the mines now owned by the Mellons will be used largely for by-product purposes.

Stockholders of the Greenbrier Smokeless Coal Co. at a meeting held in Lewisburg, Greenbrier County, late in February, elected the following directors: R. M. Bell, Mason Bell and W. E. Nelson, of Lewisburg; W. B. Hines, of White Sulphur; Edward Graff, of Macdonald, and A. Erskine Miller, of Staunton. A report made by general manager H. H. Blackburn disclosed rapid development of the property of the company in the new Greenbrier smokeless field, the mines of this company being among the first opened in the field.

House Bill No. 476, introduced in the House of Delegates by Representative Strother, of Welch, proposes that the mine inspection year be made concurrent with the calendar year. It would change the present law so that the chief of the department of mines would make his annual report to the Governor for the year ending Dec. 31, instead of June 30, and to file it not later than June 30. Each district mine inspector would be required to make his annual report in like manner. Another amendment proposed in the Strother bill would require that the operator or agent of every coal mine must mail or deliver to the chief of the department of mines in January instead of July a report for the preceding twelve months ending with December instead of June.

Another attempt will be made to organize the non-union coal fields of West Virginia, according to word reaching operators in Charleston. Percy Tetlow, mine union organizer, and a corps of assistants, are expected to enter the fields within the next thirty days. A fund of \$1,500,000 is declared to have been collected for the purpose during the last few months when each union miner was assessed \$2 a month in addition to regular union dues. It cost the miners \$2,000,000 to try to organize West Virginia in its last attempt, it is said.

## WISCONSIN

A bill which aims to keep water out of coke sold in Wisconsin has been introduced in the Legislature. It is asserted that coke has been sold 30 per cent of the weight of which represented water. A tolerance of 10 per cent moisture is to be allowed for coke. Any excess over that amount will have to be deducted if the bill becomes a law.

## WYOMING

In January the Owl Creek Coal Co., at Gebo, mined over 2,000 tons per day worked, according to J. C. Rae, general superintendent. Mr. Rae attended the meetings of the Rocky Mountain Coal Mining Institute in Denver, Colo. Feb. 26, 27, and 28. Albert Griffin, of the Owl Creek organization, also visited in Denver.

## CANADA

### COAL OUTPUT OF BRITISH COLUMBIA, JANUARY, 1923.

VANCOUVER ISLAND DISTRICT		Tons
Mine		
Western Fuel Corporation of Canada, Nanaimo		60,540
Canadian Collieries (D) Ltd., Cumberland		23,180
Canadian Collieries (D) Ltd., Extension		17,744
Canadian Collieries (D) Ltd., South Wellington		10,268
Granby Consolidated M. S. & P. Co., Cassidy		24,615
Nanoose Wellington Collieries, Lantzville Mine		10,438
Old Wellington Colliery		1,002
Total		147,787
NICOLA-PRINCETON DISTRICT		
Middlesboro Collieries, Middlesboro		7,236
Fleming Coal Co., Ltd., Merritt		1,984
Coalmont Collieries, Coalmont		14,919
Princeton Coal & Land Co., Princeton		2,218
Total		26,357
CROW'S NEST PASS DISTRICT		
Crow's Nest Pass Coal Co., Coal Creek		58,842
Crow's Nest Pass Coal Co., Michel		32,492
Corbin Coal & Coke Co., Corbin		5,587.32
Total		96,921.32
Grand Total, January		271,065.32



Initial steps were taken to form a Canadian industrial research organization to solve the Canadian fuel problem at a recent conference in Ottawa of representatives of the universities of the Dominion, of the scientific branches of the government and of the Canadian Manufacturers' Association.

The summary discharge of Sid McNeill, which resulted in a strike of 2,500 employees of the British Empire Steel Corporation, was upheld Feb. 21 at a hearing, agreed upon by strikers and company officials, in a strike settlement. The workers have returned to their posts and are bound by agreement to abide by the decision regarding McNeill.

William Sloan, Minister of mines, in an address at Nanaimo on Feb. 23 emphasized that the importation of foreign fuel oil was undermining the coal-mining industry on Vancouver Island and advocated an increased importation duty on fuel oil. Mr. Sloan stated that in 1910 the coal output of the province was 2,500,000 tons, compared with 2,595,000 tons in 1920 and 2,483,995 tons in 1921. In 1910 importation of fuel oil began to assume considerable proportions, and at the present time is replacing 90,000 tons of coal per month, or a volume equal to approximately three-quarters of the present monthly output. Mr. Sloan will leave soon for Ottawa, where he will bring to the notice of the Dominion Government the need for increasing the tariff on fuel oil, so far as British Columbia is concerned, at any rate.

The Herewood Mine, Western Fuel Corporation of Canada, Nanaimo, B. C., has been closed down and, it is understood, is to be completely abandoned. This property is situated about three miles from the City of Nanaimo. It was opened some 40 years ago and its initial operation was unique by reason of the fact that transportation was effected by means of an aerial tramway from the mine to Nanaimo Harbor. Over a considerable period it was shut down and was developed a second time by the New Vancouver Coal Co., which since has passed out of existence. Once more its workings were deserted, not becoming active again until 1916, when the Western Fuel Corp. took hold and so pushed work that during the war the Herewood became a considerable producer. It was at this time that it reached its peak in point of output, an average of 1,000 tons a day being mined and brought to the surface. In recent months the production has been steadily declining until finally it ran to only a few hundred tons a day.

## Traffic News

Electrification of 80 miles of the Virginian Ry. through the coal fields in Virginia and West Virginia has been announced. The new process will extend from Pulaski, Va., to Elmo, W. Va., according to announcement. This will greatly facilitate movement of coal to Tidewater, where the Virginian's new pier, costing over \$3,000,000, is now being built.

On account of accumulation an embargo has been placed by the New York Central R.R. against all shipments of coke consigned, reconsigned or intended for Hart & Crouse, Utica, N. Y.

Embargo 298, placed Feb. 21 by the New York Central R.R. against all freight for delivery to the Fonda, Johnstown & Gloversville Ry., has been modified to include in the exceptions bituminous coal consigned to the F. J. & G. R.R. for its own supply use.

Embargo 292, placed by the New York Central R.R. against all shipments of coal consigned to or intended for the Buffalo General Electric Co., Harriet, N. Y., has been entirely cancelled.

Embargo 420-D, placed by the New York Dock Ry. (Fulton, Baltic and Atlantic Terminals) Brooklyn, N. Y., against shipments of coal and coke consigned or intended for delivery to Patrick Reilly, D. Reilly and E. A. Tuttle Co. is entirely cancelled.

Domestic coal handlers, steamboat concerns and others interested are preparing to make a stiff fight against the proposal of the Norfolk & Western Ry. and the Virginian Ry. to discontinue the flat rate on coal for customers who require barging to their plants. This is a practice which has operated at Norfolk for twenty-five years, and the railroads propose to discontinue it as of April 1. Under the proposed new arrangement the rate on coal delivered to any waterfront plant not connected by rail would be the same as the rate to any point in the harbor inside the Capes. The Chamber of Commerce and other commercial bod-

ies are opposing the proposed revision of rates.

Amendment No. 1 to Service Order No. 38 was issued by the Interstate Commerce Commission Feb. 26. By its provisions Service Order No. 38 is vacated and set aside effective at midnight Feb. 26.

In a complaint filed with the Interstate Commerce Commission Jan. 31 by the Colorado Fuel & Iron Co. against James C. Davis, Director General of Railroads, and his successors, as agent, and the Colorado & Wyoming Ry., the complainant asks in reparation for unlawful charges for freight on an electric locomotive the sum of \$232.02 with interest.

Reports of several of the more prominent railroads show that during January the Philadelphia & Reading Ry. made an increase in net operating income for January, 1923, of \$1,880,258 over the same month of the preceding year. The Lehigh Valley showed a deficit in January of \$929,033, against a credit of \$350,514 in January, 1922. The disappointing showing made by this road was due to maintenance of equipment expenditures \$887,953 higher in January, 1923, than the year previous and transportation expenses \$362,640 higher. The New York, New Haven & Hartford reported a net operating deficit of \$780,587 in January, against net income of \$892,565 in January, 1922. The January gross income amounted to \$9,911,556, against \$8,724,503. The New York, Ontario & Western reported a net operating deficit of \$208,615, against a deficit of only \$92,418 in the same month of 1922. The Atchison, Topeka & Santa Fe had January gross income of \$19,217,191, against \$14,606,364 the same month of the preceding year, and net income of \$4,328,238, against \$561,102 in January, 1922. The Chicago Milwaukee & St. Paul showed a substantial increase in both gross and net operating revenue for January. Gross revenue was \$14,470,239, a gain of \$3,597,992 over the same month in 1922, and net operating income, totaled \$1,824,419 against a deficit of \$466,786 in January, 1922. The Central Railroad of New Jersey reported total operating revenue in January of \$4,364,572 against \$5,969,907 in January of the preceding year, and net operating income of \$117,139 against \$205,076. The Missouri, Kansas & Texas reported net operating income of \$519,321 in January, an increase of \$255,527 over the corresponding month of the preceding year. The Illinois Central report for January showed a gross of \$16,595,121, against \$12,608,683 in 1922 and net operating income of \$2,879,533 against \$1,588,585. The Erie had a net operating income of \$321,521, against \$199,303 in 1922 and total revenue was \$9,652,325 against \$7,177,250. The Southern Ry. showed excellent January earnings. Operating revenue was \$12,052,413 against \$9,217,531 in the same month of the preceding year and net income after taxes, etc., was \$2,196,430, compared with \$736,196 the same month a year ago. The Delaware & Hudson reported a deficit of \$400,000.

Senator Brookhart, of Iowa, head of a committee of the new progressive bloc charged with transportation legislation, in introducing a bill on Feb. 24 to repeal vital sections of the Esch-Cummins transportation act, urged an extra session of the next Congress to consider railroad legislation. Abolition of the Railroad Labor Board, transfer of its functions within six months to the Federal Board of Mediation, repeal of the 6 per cent. income guarantee of the law and drastic changes in railroad valuation are provided for in Senator Brookhart's bill. He said the measure if passed would "take seven billion dollars of water out of the valuation" of railroads. "The bill also stops the capitalization of unearned increment in property value," said Senator Brookhart, "and defines the adequate return so it will not exceed the interest rate on the bonded portion of the capital." Interlocking directorates and Interstate Commerce Commission jurisdiction over intrastate rates also are prohibited by the terms of the bill. Senator Brookhart promised to introduce another bill later "to stop excessive profiteering by subsidiary corporations."

The Interstate Commerce Commission has approved the application of the Louisville & Nashville R.R. to issue \$45,000,000 additional capital stock to be distributed as a stock dividend. Approval was given on condition that certain holdings of stock of affiliated companies of the road shall not be disposed of without first procuring permission from the Interstate Commerce Commission and that no expenditures made prior to Oct. 1, 1922, shall be capitalized by issue of bonds or other securities to reimburse the treasury of the Louisville & Nashville. The increase is equal to 62.5 per cent. of the present outstanding stock of \$72,000,000.

For the purpose of developing an area of virgin timber and New River type of coal, the Chesapeake & Ohio asked permission of the Interstate Commerce Commission March 2 to build an extension of its Gauley branch 10.6 miles beyond Bryce, W. Va. The territory to be served, the applicant said, was now inaccessible to railroad, notwithstanding the good timber and the high quality of coal.

Hearing before Harris Fleming, examiner for the Interstate Commerce Commission, was held in Newport News last week in an effort to arrive at some adjustment of the Newport News freight rate on anthracite. This rate is \$4.30, gross, while the rate to Norfolk and Richmond is \$3.40 gross. The Chesapeake & Ohio Ry. agreed to give Newport News the lower rate, but the Pennsylvania proposed a rate of \$3.91, which was not agreeable to the Newport News dealers.

The Boston & Maine R.R. has put into effect a new schedule of discharging rates on coal and coke at Boston and at Salem, Mass. The increase was made in the face of strong opposition at a recent hearing before the wharf commission. New discharging rate on coal per gross ton, single deck vessels, is 35c.; other type vessels 45c. On coke the rate net, single deck vessels is 70c. a ton and on other type vessels 90c. Weighing charges on coal are placed at 4c. a gross ton with a minimum charge a car of \$1.35; on coke 6c. a net ton with minimum of \$1.35 a car. For services performed on holidays the rates are 50 per cent higher.

## Obituary

Paul C. Voss, former salesman for the Harvey-Jellico Coal Co., Louisville, died at his home on Greenwood Avenue on Feb. 17 of a complication of diseases, after an illness of a year. He is survived by his parents, a brother and one sister.

E. H. Irwin, 63, sales manager of the Harrisburg Colliery Co., died at his home in Chicago, Ill., Feb. 20, from pneumonia. Mr. Irwin, who was well known in the mid-western coal trade, was born in Glendale, Ky. He began his career in the coal industry by long service for Hull & Co. in Louisville, Ky., New York and Chicago. Later he joined the O'Gara Coal Co., which operates in southern Illinois. He left the sales managership of that company to join the Harrisburg Colliery Co. in January, 1922. Funeral services were held in Chicago, Feb. 22 and the body was taken to Elizabethtown, Ky., for burial the following day. He is survived by his widow, one son and two brothers, W. B. Irwin, Riverside, Cal., and Judge J. L. Irwin, county judge of Hardin County, Kentucky.

## Coming Meetings

International Chamber of Commerce will hold its second general meeting in Rome, Italy, March 19-26.

American Society for Testing Materials will hold its annual meeting at the Chalfonte-Haddon Hall Hotel, Atlantic City, N. J., beginning June 25 and continuing throughout the week. Secretary, E. Marburg, Philadelphia, Pa.

The Colorado & New Mexico Coal Operators' Association will hold its annual meeting June 20 at Denver, Col. Secretary, F. O. Sandstrom, Denver, Col.

The Electric Power Club's annual meeting will be held at the Homestead Hot Springs, Va., Dec. 11-14. Executive secretary, S. N. Clarkson, Cleveland, Ohio.

Indiana Bituminous Coal Operators' Association will hold its annual meeting March 14 at Terre Haute, Ind. Secretary, P. H. Penna, Terre Haute, Ind.

National Foreign Trade Council will hold its annual conference May 2-4 at New Orleans, La. Secretary, O. K. Davis, 1 Hanover Square, New York City.

The Gas and Fuel Section of the American Chemical Society is arranging a second sectional meeting at the New Haven meeting of the American Chemical Society during the first week in April. The section program will consist of papers on gas and fuel chemistry and a symposium on motor fuels, held jointly with the petroleum division.

The eleventh annual meeting of the Chamber of Commerce of the United States will be held in New York City May 7-10.